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DISEASES OF THE NOSE.

BY

CLINTON WAGNER, M. D.,

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TO

WILLIAM A. HAMMOND, M. D.,

SURGEON GENERAL U. S. ARMY, (RETIRED LIST): PROFESSOR OF THE DISEASES
OF THE MIND AND NERVOUS SYSTEM IN THE NEW YORK POST
GRADUATE MEDICAL SCHOOL,

THE ORGANIZER OF THE MEDICAL DEPARTMENT, PERFECT IN ALL ITS
DETAILS, OF AN IMMENSE ARMY, DURING A GREAT WAR,

—AND—

AN EARNEST WORKER IN THE FIELD OF MEDICAL SCIENCE,
This Book is Dedicated
As a Mark of Esteem
By his Sincere Friend and Former Pupil
The Author.

PREFACE.

In an experience extending over twenty-five years, nearly fourteen of which have been devoted exclusively to the study of the diseases of the nose and throat, I have enjoyed unusual opportunities in private, hospital, and dispensary practice, for gathering and utilizing material upon which to base this work.

The literature upon diseases of the nose is of recent origin; by far the greater part has been the outgrowth of investigations and labors, in this special branch, made during the past twelve or fourteen years. The introduction of the present methods of examining has enabled us to recognize, account for, and properly treat, pathological conditions, the existence of which, in the pre-rhinoscopic era, would not have been suspected.

I might instance the presence of small gelatinous polypi, producing severe paroxysms of sneezing, or attacks of asthma; of adenomata at the vault of the pharynx, causing deafness and interfering with nasal respiration; of the "*sensitive area*" of Mackenzie, of Baltimore, giving rise to obstinate and persistent cough; and the causes of certain forms of epistaxis, as described by Little and Lefferts.

Modern rhinoscopy has made nasal surgery comparatively easy for the operator; unlike laryngoscopy, it has originated no operation requiring that high order of skill which only the trained eye and hand possess, for the removal, *per vias naturales*, of foreign bodies lodged in the larynx.

Any one competent to make examinations properly by the present known methods, who has a fair knowledge of the anatomy of the parts, requires no special skill or training for performing the operations on the nose daily undertaken by specialists.

The operations for the removal of polypi, for deflected septum, hypertrophied mucous membrane, removal of a foreign body, adenoid vegetations, necrosed bone, are simple and easy of performance, and usually unattended with danger to the physiological function of the organ, and still more rarely, the life of the patient.

The consideration of certain subjects, such as rhino-plastic operations, *tumors of the external* surface, diseases of the skin, of the lachrymal gland and duct, glanders, aural and, pharyngeal complications, I have purposely omitted; they belong properly to other departments of general or special surgery, and the reader is referred to the numerous excellent treatises and monographs in which they are contained.

I take pleasure in acknowledging the valuable assistance I have had from several friends, especially Prof. G. F. Whiting in the chapters on Anatomy and Physiology, and in collecting references and making abstracts from interesting articles; also to my assistant, Dr. W. K. Simpson, of the Metropolitan Throat Hospital and N. Y. Post-Graduate Medical School.

To Prof. Lefferts, I am under obligations for kindly placing at my disposal original drawings, from which I was permitted to have wood cuts taken.

C. W.

June, 1884,
341 Fifth Avenue,
New York.

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ERRATA.

Page viii., Chap. X., after Cavities, insert Myxomata or Gelatinous Polypi.
“ “ “ XIII., after Gummata, insert Blood Tumors of the Septum.
“ “ “ “ for Lypomata read Cystomata.
“ “ “ “ after Cystomata, insert Tumors of the Soft Palate.
“ “ “ “ after Tumors of Soft Palate, insert Malignant Tumors.
Page 19, line 5, for parralel, read parallel.
“ “ “ 8, for inferior meatus, read superior meatus.
“ 35, “ 10, for criore, read croire.
“ “ “ 14, for le autre, read l'autre.
“ 40, “ 26, for sizes, read size.
“ 41, “ 5, for larger, read large.
“ 46, “ 9, for larnyx, read larynx.
“ 64 and 67, line 30, for d'mal, read des mal.
“ 116, line 13, for nares, read naris.
“ 123, “ 14, for pains, read pain.
“ 138, “ 27, for plate, read Figures 39 and 40.
“ 148, in the heading of Chap. XIII., for Lypomata read Cystomata.
“ 161-3-5, for Cystomata at head of pages, read Tumors of the Soft Palate.

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DISEASES OF THE NOSE.

CHAPTER I.

ANATOMY OF THE NOSE AND NASAL FOSSÆ.

THE nose—the roof or protective shield of the nasal fossæ—is a hollow triangular pyramid placed perpendicularly in the median line of the face, its apex above and its base below. While its apex is attached to the frontal bone, its base is free, looks directly downward, and is pierced by two openings, the anterior nares. Though described as a triangular pyramid, one of its sides, the posterior one, is wanting, and in its place we find the nasal fossæ, whose floor is formed by the superior surface of the hard palate.

The two existing sides of the pyramid are composed of a framework consisting of bones and cartilage connected by a firm fibrous structure. Upon the external surface of this framework lie the nasal muscles, covered by the skin, in which some of them are inserted.

Its internal surface is lined by mucous membrane, the olfactory and pituitary membranes.

The summit or apex of this pyramid is united to the middle of the frontal bone at its inferior border.

The upper half of the nasal framework is composed of very firm and resisting bones, resting upon and supported in the median line by the nasal spine of the frontal bone, the perpendicular plate of the ethmoid, and the cartilage of the septum. The inferior portion of *this, the osseous* half of the nasal framework, is united to the lower or cartilaginous half by a firm osseo-cartilaginous articulation or suture.

OSSEOUS PORTION—This portion of the roof of the nasal fossæ consists of the two nasal bones and the nasal processes of the superior maxilla. The nasal processes of the latter bone project upward, forward, and inward, the superior margin of each articulating with the frontal bone on either side of the nasal spine, and their internal border articulates with the outer margin of the nasal bones proper. As these two latter

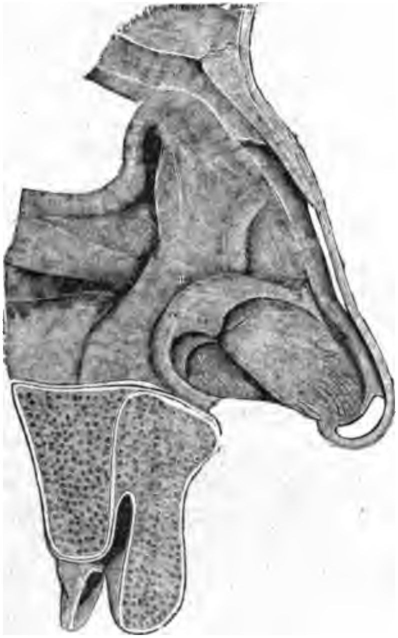

FIG. 1.—CARTILAGINOUS AND OSSEOUS FRAME-WORK OF THE NOSE.

I. Right lateral cartilage. II. Anterior border of the cartilage forming with the corresponding border of the opposite cartilage, an angular pit at bottom of which is seen the cartilage of the septum. III. Anterior border of the cartilage of the septum. IV. Anterior accessory cartilages. These cartilages are always present. V. External branch of the cartilage of ala of the nose. VI. Cartilaginous nodules. VII. Middle part of the right cartilage of the ala separated by a depression from the middle part of the left side.—SAPPEY.

bones articulate with each other in the median line, the upper portion of the roof of the nasal fossæ is thus complete. The superior ends of the nasal bones articulate with that portion of the lower border of the frontal bone lying between the nasal processes of the superior maxilla. These bones thus uniting form a very resisting roof, narrow and very thick above where it articulates with the frontal bone, but in descending it spreads out, becomes much thinner and terminates in a very sharp border to which is united the lateral nasal cartilages. Thus this firm and unyielding portion of the roof securely protects the olfactory region from any external violence.

THE CARTILAGINOUS PORTION.—This portion of the nose consists of four large and distinct cartilages, situated two on either side of the median line, united together by strong fibrous tissue, and of several small floating cartilages, which vary in number and form. Of the four larger cartilages, which, as already stated, are divided into pairs, situated two on either side of the median line, the upper two are known as the *lateral nasal cartilages*; and the lower pair, together with the floating cartilages, are called the *cartilages of the alœ.*

THE LATERAL NASAL CARTILAGES.—These triangular cartilages are situated below the inferior border of the nasal bones, and are united to them by a firm fibrous union. Besides being joined to the nasal bones, they are united to the anterior margin of the septum and also to the nasal process of the superior maxilla. While their external surface is convex their internal surface is concave, this concavity forming a part of the superior portion of the nasal fossæ. Externally these two cartilages are covered by the borders of the pyramidalis *nasi,* and the compressor nasi muscles;

their internal surface is lined by the pituitary membrane.

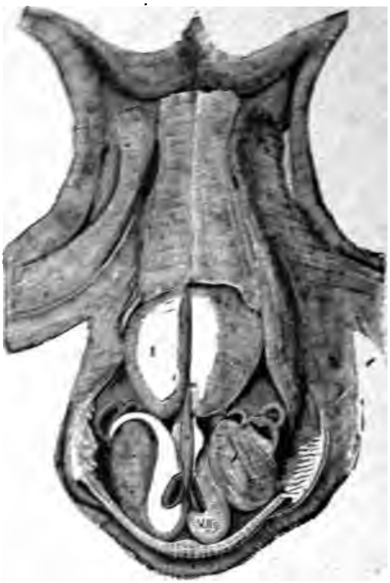

FIG. 2.

I. Portion of the external wall. II. Curved line marking the respective limits of the nares, and of the corresponding nasal fossa. III. Anterior part of this line formed by the prominence of the interior border of the lateral cartilage. IV. Its posterior part formed by the superior border of the cartilage of the wing of the ala. V. Depressed portion of the external wall. VI. Prominence that the latter cartilage presents. VII. Anterior extremity of the cavity of the nares.—SAPPEY.

THE CARTILAGES OF THE ALÆ.—There are several cartilages in the framework of the ala, one large one known as the "cartilage of the ala," (also known as the "lower lateral cartilages of the nose") and three or four smaller ones called "floating cartilages." The larger cartilage is composed of two portions, an external and an internal portion. The external portion, which is by far the greater of the two divisions, is irregularly quadrilateral in form; while its external surface is convex and covered with skin, its internal surface is concave and lined with mucous membrane. The internal portion of the cartilage is generally triangular in shape, while the outer surface is slightly concave from before backward, and is lined by the pituitary membrane. The internal surface is correspondingly convex and lies in apposition to the cartilage of the opposite side.

The two divisions of this cartilage join each other in front at an acute angle, and thus inclose between them the anterior portion of the vestibule of the nostril.

The general contour of the nares is dependent upon the shape of the two wings or divisions of this cartilage and the patency of the nares is maintained by the two divisions of this cartilage being kept apart by the elasticity of the cartilaginous band uniting them. This elasticity can, however, be overcome by the action of certain of the nasal muscles. This voluntary closure of the nares will be explained later on when speaking of the muscles of this region.

The remaining cartilages are improperly called "floating cartilages," for several of them are often firmly attached, either to the lateral nasal cartilage or to the cartilage of the ala by a continuation of the perichondrium. The number and position of these cartilages vary. There is generally one situated at the inferior end of the lateral nasal cartilage, and closely united to it by a continuation of the perichondrium. A second cartilage is found between the posterior angle of the cartilage of the ala and the superior maxilla. Besides these there may be present one or two others, but their relative positions when present are not always the same. All the floating cartilages are united to each other and to the fixed cartilages by bands of *strong fibrous tissues.*

The Septum.—If a strong knife is introduced into one of the anterior nares of the subject, and keeping the instrument close to the median line, the nose laid open from its tip to the frontal bone, it will be found that the middle portion of the nasal roof is supported throughout from its superior to its inferior extremity by a strong osseo-cartilaginous framework (the septum) and that this support divides the cavity bridged over by the nasal roof into two equal portions, the right and left nasal fossa. The right and left nasal fossæ are not invariably of the same dimensions, for not unfrequently the septum, instead of maintaining the median line throughout its extent, is deviated either to the right or left, thus diminishing the caliber of the nasal fossa of that side.

Structure of the Septum.—The antero-superior half of the septum is composed of bone and cartilage. The bony portion, which forms nearly one-half of this division of the septum, consists of the perpendicular plate of the ethmoid, which plate articulates in front with the cartilage of the septum, below with the vomer, and above with the frontal bone. The remaining portion of this division of the septum consists of the so-called "cartilage" of the septum. This cartilage is quadrilateral in form, articulating by means of its postero-superior border with the perpendicular plate of the ethmoid; by its antero-superior border with the nasal spine of the frontal bone, and is connected by a continuation of the perichondrium with the lateral nasal cartilages and the cartilages of the ala. Its postero-inferior border articulates with the antero-superior border of the vomer. The only remaining border, the antero-inferior, is free. The posterior angle of the cartilage often penetrates between e two laminæ of the vomer, sometimes extending even as far as the sphenoid. The inferior half of the septum consists of the vomer, a thin osseous structure, quadrilateral in form, presenting four borders and two surfaces, extending from the sphenoid to the anterior nasal spine of the superior maxilla in front, where it terminates in a very short point. This bone is sometimes composed of two laminæ. Its superior surface articulates with the sphenoid; its anterior surface articulates with the perpendicular plate of the ethmoid and the cartilage of the septum; its inferior border articulates with the horizontal plate of the

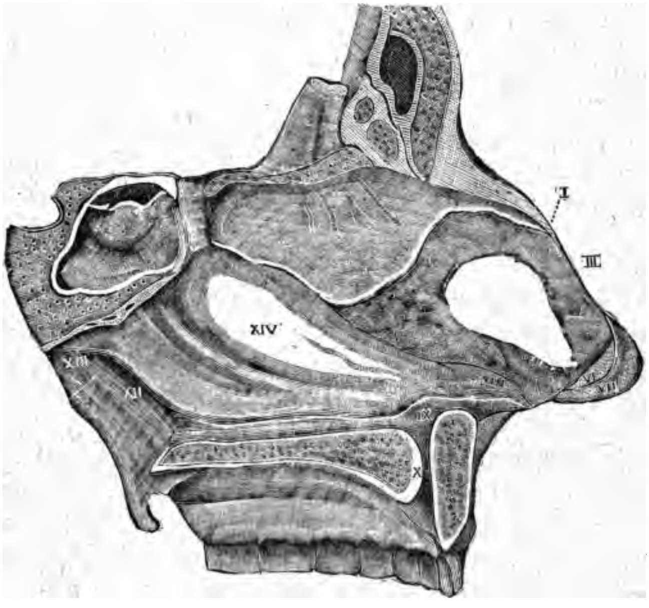

FIG. 3.—THE SEPTUM.

I. Cartilage of the septum. II. Supero-posterior border of this cartilage. III. Antero-posterior border. IV. Cut surface of the right lateral cartilage. V. Antero-inferior border of the cartilage of the septum. VI. Internal wing of the cartilage of the left ala. VII. Postero-inferior border of the cartilage of the septum. VIII. Intra-vomerian prolongation of the cartilage, the superior and inferior borders are indicated by two *dotted lines*. IX. Superior border or base of the vomer. X. Posterior *border of this bone*. *XI.* Its inferior border united to the palatine bones at the *palatine-apophysis of the* superior maxillary bones.—SAPPEY.

palate bone and the palate process of the superior maxilla. The posterior border of the vomer is free and is covered by mucous membrane. Between the anterior portion of the vomer and the cartilage of the septum there is always present a small oblong cartilage which projects as far forward as the point of the anterior nasal spine. On either side of the vomer is a deep groove running nearly parallel with the superior border. In this groove lies the naso-palatine nerve. Below this groove, and running almost parallel with it, is a prominent ridge. This ridge is also continued across the inferior angle of the cartilage of the septum. This ridge, the agger nasi, serves during the act of sniffing to direct the current of air upward and toward the olfactory region. The mechanism of this action will be described later on.

THE ANTERIOR NARES.—The anterior nares are two small cavities situated at the base of the nasal pyramid, lying under and in front of the nasal fossæ, with which they communicate by their superior apertures. The anterior nares are usually understood to be merely the openings of the nasal fossæ, but some authors consider them as cavities extended somewhat less than an inch backward and upward toward the nasal fossæ. Again, these cavities are called the vestibules of the fossæ. This latter term is by far the most convenient, for we can then consider the anterior as well as the posterior nares as the mere entrances and exits of the nasal fossæ.

These vestibules (or cavities of the nares) extend from the base of the pyramid upward and backward to the extent of from one-half to three-quarters of an inch, their upper limit being marked by the superior border of the cartilage of the ala.

These cavities, as stated above, open upward and backward into the nasal fossæ. While the nasal fossæ are throughout their entire extent lined with mucous membrane, their vestibules are merely lined with a fold of skin which extends inward from the external surface through the anterior nares. The skin lining the vestibules does not present the same character throughout their entire extent.

At the inferior entrance of the vestibules the skin is freely supplied with sebaceous glands and hair follicles, which gradually diminish in number as we approach their superior border, a short distance from which they entirely disappear. The coarse hairs which grow in the inferior part of the vestibule have the same mechanical action as the hair growing from the free margins of the eyelids and the hairs found growing in the external auditory meatus. The action of the hairs in these different places is to prevent particles of dust from coming into contact with the sensitive organs near which they are found.

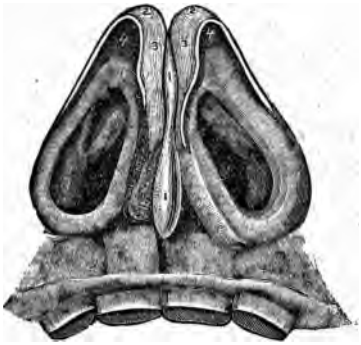

FIG. 4.

1, 1. Anterior-inferior border of the cartilage of the septum. 2, 2. Middle part of the cartilages of the ala of the nose. 3, 3. Internal branch of the cartilages. 4, 4. The inferior border of their external branch.

THE NASAL FOSSÆ.—The nasal fossæ are two large and irregular cavities, situated in the middle of the face, one on either side of the septum. They present for consideration a roof, floor and two walls—the external and internal walls—two orifices, the anterior and posterior nares, and finally the mucous membrane lining their walls.

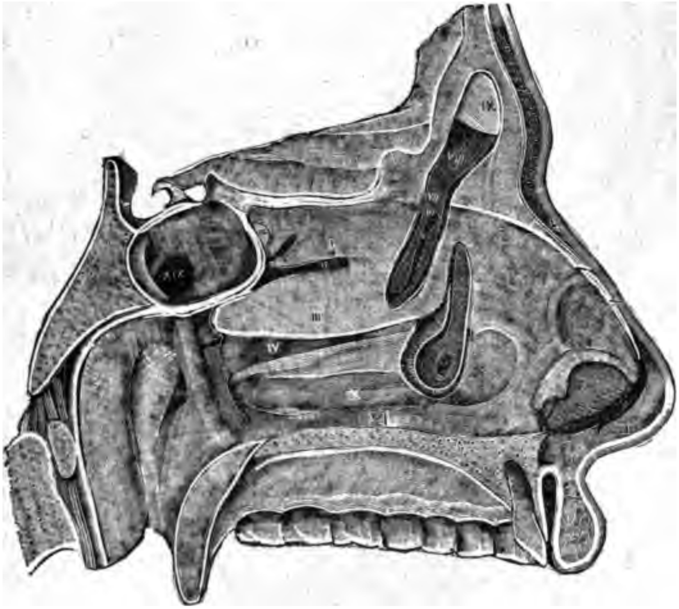

FIG. 5.—SAPPEY.

The vault of the nasal fossæ is long and narrow, concave from side to side, and from before backward. Its antero-superior part is formed by the nasal roof, its superior portion by the horizontal plate of the ethmoid, and its postero-superior portion by the anterior surface of the body of the sphenoid.

The anterior portion of this wall presents no feature of special interest, but the middle portion of the cribriform plate of the ethmoid presents to our notice numerous minute apertures through which the filaments of the olfactory nerves find exit from the cranial *cavity. It s*hould be remembered that these

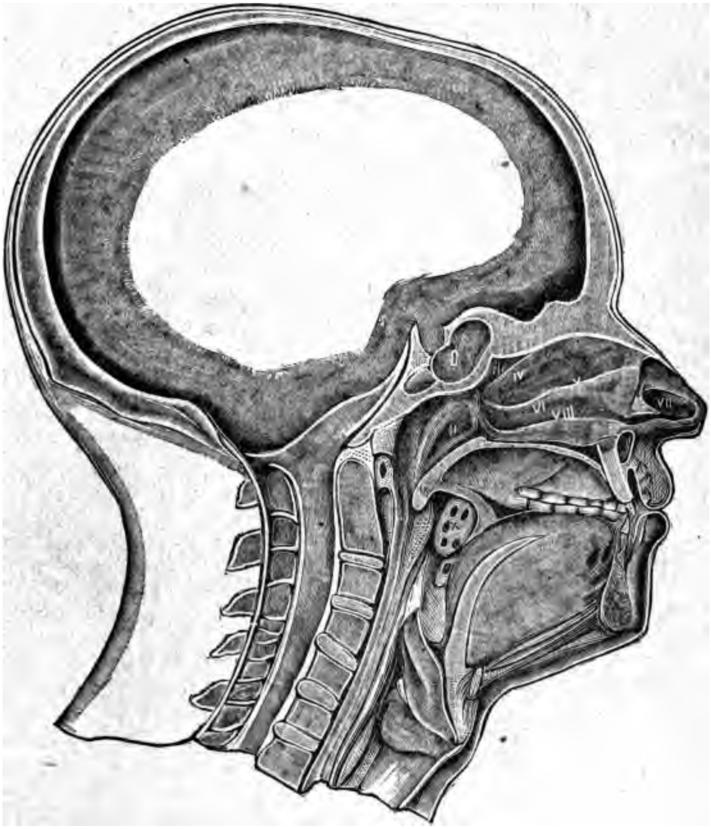

FIG. 6.

Figure 6 was drawn expressly for this work from a carefully prepared frozen section of the head. It represents accurately what may be termed the "dip" of the turbinated bones. Usually they are made to appear parralel with the hard palate as in figure 5 taken from Sappey.

I. Sphenoidal sinus. II. Eustachian orifice. III. Sphenoidal foramen. IV. Superior turbinated bone. V. Inferior meatus. VI. Middle turbinated bone. VII. External wall. VIII. Inferior turbinated bone. IX. Uvula. X. Tonsil.—ORIGINAL.

openings are only to be seen in the dried bone, for during life they are filled by the olfactory filaments and covered by the nasal mucous membrane.

In either fossa there is to be seen a small opening upon the anterior surface of the perpendicular laminæ of bone, which form the front wall of the sphenoidal cells. By means of their two openings the sphenoidal cells communicate with the nasal fossæ.

The floor slopes slightly from before backward, and is concave from side to side. It is formed in front by the palate processes of the superior maxillary bones; behind by the upper surface of the horizontal plates of the palate bones. That portion of the floor of the nasal fossæ which is formed by the upper surfaces of the anterior nasal spines of the superior maxillary bones is more elevated than its general level. Immediately behind their elevated portion is a slight depression, one on either side of the septum, and at the bottom of each depression is the superior opening of the anterior palatine canal. The inner wall, which is formed by the septum, has already been described when speaking of the structure of the latter.

The outer wall of each nasal fossa is composed solely of osseous structure. The bones which form this wall are six in number. In front we have the anterior portion of the inner surface of the body of the superior maxilla and the inner surface of its nasal process; in the middle the lachrymal bone—sometimes called the os unguis—immediately behind this the lateral masses of the ethmoid, the posterior portion of the inner surface of the superior maxilla; behind we have the vertical plate of the palate bone and the internal pterygoid process of the sphenoid. For a description of these bones the reader is referred to some treatise on human osteology, for it does not come within the scope of the present work to enter into a description of the facial bones.

Projecting from the outer wall, and forming part of its framework, are the three turbinated bones. The middle and inferior turbinated bones are very thin structures ; are, in fact, mere osseous shells, so thin that when dried they are easily broken with the fingers. What makes them appear bulky on the live subject is the thick erectile mucous membrane which covers them. Of these two turbinated bones, the inferior is the longest, extending from the vestibule to the posterior nares. The middle turbinated, arising about a quarter of an inch farther back, terminates posteriorly on the same line as on the preceding.

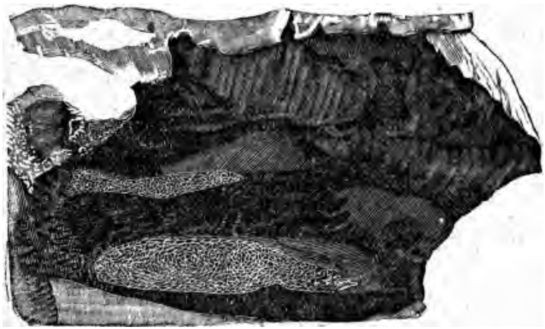

FIG. 7.—DWIGHT.

Both of these bones are concavo-convex, their convexity facing upward, inward, and toward the septum, while their concavity looks downward and outward toward the external wall of the nose. By their superior border they are attached to the osseous walls of the nose. The superior turbinated bone is merely a plate of the lateral mass of the ethmoid bone. This so-called superior turbinated bone protrudes so slightly into the nasal fossa that it cannot be seen on the living subject, either through the anterior or posterior nares. These thin bones divide the nasal fossa into three divisions, the so-called meati of the nasal fossa. Of these meati the middle and inferior are the chief nasal respiratory channels; the superior meatus giving passage to but little, if any, air during quiet respiration, allows quite a volume to pass through it during the act of sniffing, which voluntary act is performed when we are desirous of obtaining a decided olfactory impression of an odorous gas.

MUCOUS MEMBRANE.—The mucous membrane lining the nasal fossæ is called by some the Schneiderian membrane, and by others the pituitary membrane. That portion of the membrane endowed with the filaments of the olfactory nerve is known as the olfactory membrane. Anteriorly the nasal mucous membrane terminates at a line corresponding to the superior border of the cartilage of the ala; posteriorly it is continuous with the mucous membrane of the upper pharynx. In health this membrane is of a roseate hue, except in the olfactory regions, where it is of a saffron brown color. In structure it is very delicate and easily torn, affording such slight support to its bloodvessels that they are frequently ruptured during the act of freeing the nostrils of accumulated secretions. Upon its free surface can be seen numerous minute openings, which are the mouths of the follicles of the muciferous glands. From each of these little follicles exudes the mucus secreted by the glands, and this mucus serves to keep the pituitary membrane moist—a condition very necessary to the proper performance of the functions of this organ.

The olfactory membrane is the thickest of the nasal mucous membrane, though less dense in structure than *the mucous membrane* lining the other portions of the nasal fossæ. This varying degree of thickness is due to the relative supply of bloodvessels and muciferous glands. The nasal mucous membrane sends prolongations to line the sphenoid cells, the antrum and the ethmoid cells.

The nasal mucous membrane is composed of ciliated epithelium.

THE ARTERIES AND VEINS, etc.—The nose is supplied with arterial blood from several sources, above by branches from the ophthalmic ; on the sides by branches from the facial; and below by the terminal branches of the superior labial. The ophthalmic artery furnishes to the nose two of its branches. 1st, the so-called nasal artery which divides into two branches, one of which, the external, descends the side of the nose and anastamoses with the facial, whilst the other branch, the dorsalis nasi, runs along the ridge of the nose, anastamoses with the artery of the opposite side and is distributed to all the soft parts of the dorsum nasi. 2nd, the anterior ethmoidal, which after having first penetrated the cranium through an aperture in the cribriform plate of the ethmoid supplies the upper portion of the pituitary membrane lining the bones of the nasal framework. The principal arterial supply of the nose is that which is derived from the facial. This artery supplies not only the entire external surface of the nose from base to apex, but also sends a branch, the superior coronary artery, to supply the skin lining the vestibule, the mucous membrane lining the septum nasi. This branch of the coronary artery is called the septi nasi artery.

The veins of the nose though small are very numerous. Those upon the external surface of the nose do not follow the course of the arteries supplying the parts, but are more or less separated from them. The most important are: 1st, the dorsalis nasi vein, which accompanies the artery of the same name, (this vein, as do all the other external nasal veins, empties into the common facial vein), 2nd, the superior and inferior nasal veins, 3rd, the superior labial.

The great vein of the nasal fossa is the ophthalmic, which vein accompanies the artery of the same name, and empties into the cavernous sinus.

The lymphatics of the nose are also numerous. These vessels collecting into small trunks follow the course of the arteries and veins and finally empty into the lymphatic channels of the face.

The sensitive and motor nerves of the nose are derived from the fifth and seventh cranial nerves and also from the spheno-palatine ganglion. The olfactory nerve, the nerve of special sense, will be described in the chapter on the physiology of the sense of smell.

THE MUSCLES OF THE NOSE.—It is hardly necessary to enter into a description of this group of muscles; we will content ourselves with describing their action. Of the action of these muscles, Gray says (p. 195): The pyramidalis nasi is a dilator of the nostril. The levator labii superiori aleque nasi draws upward the upper lip and the ala of the nose; its most important action is upon the nose, which it dilates to a considerable extent. The action of these muscles produces a marked influence over the countenance, and is the principal agent in the expression of contempt. The two levatores alæ nasi are the dilators of the pinnæ of the nose, and the constrictores nasi appear to act as a dilator of the nose rather than as a constrictor. The depressor alæ nasi is a direct antagonist of the preceding muscles, drawing the upper lip and ala of the nose downward and thereby constricting the aperture of the nares.

CHAPTER II.

PHYSIOLOGY OF THE NOSE.

THE ORGAN OF OLFACTION.

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The organ of olfaction consists essentially of a soft and velvety yellowish brown mucous membrane, containing in its structure a fine plexus of the terminal filaments of the olfactory nerve. The exact extent of this membrane has not been very accurately defined, and some anatomists deem it sufficient to say, that it is limited to the superior portion of the nasal cavity, serving as a lining membrane of its osseous walls. As the terminal filaments of the olfactory nerves are the medium through which the brain receives the impressions made by the presence of odorous substances, the extent of the olfactory mucous membrane proper must be co-extensive with the distribution of these filaments. The ramification of the olfactory nerve discovered in 1536 by Massa, mentioned in the works of Schneider and Willis in 1665—64 respectively, were not described with exactness until the year 1789 by Scarpa. The olfactory nerves passing down from the olfactory bulb in the forms of numerous filaments, emerge through the apertures of the laminæ cribrosa, and are distributed in the form of a fine plexus to the mucous membrane, covering the perforated plate of the ethmoid, the inner surface of its lateral masses, as far down as the middle turbinated bone, and are also distributed to the upper half of the septum. It is claimed by some that the nerves extend as far down as the center of the middle turbinated bone, but this is, I think, a mistake. It was formerly thought that the mucous membrane lining the sinuses opening into the nasal cavities was also endowed with filaments of this nerve, but dissections and experiments have proved that such is not the case. These sinuses, laid open during surgical operations or by accident, have always been found to be incapable of detecting odorous substances brought into contact with their lining membrane. Though they are thus incapable of perceiving odors, yet they have no unimportant relation to the organ of olfaction, for they serve as reservoirs for the odoriferous particles which we sniff up through our nostrils, and not being directly in the respiratory channel the odorous particles may there remain undisturbed for several hours. This, though apparently contrary to the law of the diffusion of gases, can be readily explained. The inspired air may carry with it, besides the odorous particles, others which when inhaled may not at the time be of an odorous nature; yet when brought into contact with the warm surface of the mucous membrane of the sinuses, will there gradually undergo certain chemical changes, and then give rise to odorous gases which, escaping from time to time, will come in contact with the olfactory region, and there produce identically the same impression as the particles gave with which they were inhaled, but which were then in a more gaseous state. One often distinctly perceives an odor several hours after having left the locality in which the odor alone existed, and this return of the odor can only be satisfactorily accounted for by accepting the above explanation. Since the mucous membrane lining the middle and inferior meati, the chief air passages of the nose, is not supplied with filaments of the olfactory nerve, it should not be capable of detecting odorous substances brought in contact with its surface; and this from daily observation and experiment we find to be the case. In ordinary respiration very little air reaches the superior portions of the nasal cavities, for almost its entire volume passes through the middle and inferior meati, only a limited amount coming into contact with the olfactory region; and although there may be present in the *inspired air an* odorous gas, we do not always perceive it, should it be present in a minute quantity; but should we sniff the air—a feat which is performed by partially closing the inferior and middle meati by the voluntary contraction of the so-called *dilator naris posterior*, and then taking a forcible inspiration—the current of air is directed upward, and is thus brought into contact with the olfactory mucous membrane, and any odor which it may contain is quickly detected. Notwithstanding the many experiments which prove that the olfactory nerve is the nerve of the special sense of smell, Majendie has claimed this distinction for that branch of the fifth nerve which is distributed to the mucous membrane lining the nasal fossæ. This physiologist bases his opinion upon the fact that patients afflicted with paralysis of the latter nerve, always lose their power of perceiving odors. He also endeavors to support his theory by the results of his experiments. He states that animals whose olfactory lobes he has destroyed, are still capable of detecting the presence of odors so long as the fifth nerve is intact. Fortunately he mentions the odors which they were able to perceive, and they were all odors of an irritant nature; such as ammonia, acetic acid, etc., substances which would cause pain in any mucous membrane subjected to their influence; and Majendie mistook the signs of pain which the animals experimented upon experienced, for the indication of the activity of the sense of smell. Though entirely wrong in stating that the fifth nerve is the nerve of olfaction, he was perfectly correct in affirming that paralysis of this nerve caused abolition of the sense. But from this undoubted fact he was led to a wrong conclusion, in believing that impressions of an odorous nature were conveyed through its fibers to the brain. The cause of his error is of easy explanation. The fifth nerve presides over the secretory functions of the muciparous glands of the olfactory region, and its influence being of an inhibitory nature, it is easy to conceive how paralysis of this nerve will so alter the normal moisture of the mucous membrane, and with it the terminal filaments of the olfactory nerve, that it will no longer be capable of perceiving odors—a condition which we often find in nasal catarrh, and which also supervenes upon the employment of the douche; though in the latter case the loss of smell is merely temporary. The olfactory mucous membrane is normally in a moist state, but should its moisture be greatly increased or, on the other hand abolished, so as to leave the membrane in a dry condition, loss of the sense of smell immediately ensues. That the so-called olfactory nerve is the special nerve of the sense of smell, is satisfactorily proved, not only by conclusions drawn from its congenital absence and from its morbid destruction, but also by conclusions drawn from experiments. Shift took five puppies from their mother, and on four of them he practiced section of the olfactory nerves inside the cranium. On the fifth he made a section behind the interior lobes of the brain, beyond the roots of the olfactory nerves. All five puppies rapidly recovered from the operation; the fifth remained in its normal state so far as regards the sense of smell, for it could still find the udders of its mother. As for the other four, they could no longer find their source of nourishment, and in order to preserve them alive it was necessary to feed them artificially. When separated from their bed, they were unable to find it, being dependent upon their sense of smell to guide them to it, for they were too young to avail themselves of the sense of sight. They remained insensible to the odors of sulphuretted hydrogen and other non-irritant gases which caused dogs of the same age not operated upon, to make efforts to escape from their influence. Like results are obtained from experiments upon persons whose olfactory nerves have been destroyed by disease, or traumatic injury, and also upon those persons afflicted with a congenital absence of these nerves. Beauclaire has demonstrated by experiment, that all parts of the nasal mucous membrane are not sensitive to odorous substances, notwithstanding that Majendie's nerve of olfaction is distributed to all portions of the nasal mucous membrane. He takes a fine glass tube, one end of which is connected with a closed vessel containing an odorous gas; the other end he introduces into one of the inferior meati of the subject of the experiment. When the gas is allowed to pass through the tube and come into contact with the mucous membrane lining the inferior and middle meati, no odor is perceived by the subject; but when the end of the tube is elevated, and the gas allowed to escape upon the mucous membrane covering the olfactory region heretofore described, its odor is quickly perceived. Care should be taken in the experiment not to introduce the tube too far, lest the gas be drawn immediately into the lungs without coming into contact with the nasal mucous membrane.

Haller and Galien maintain that odors returning with the expiratory air cannot be perceived, and support their theory by citing such cases as those who suffer from dyspepsia and cancer of the stomach being unable to perceive the disagreeable odors which ascend from the latter organ. This assertion, though still, perhaps, supported by a few, has long since been discarded by most physiologists.

That odors ascending either from the lungs or the stomach, are seldom perceived by the subject, is easily explained by the fact that when the olfactory region is for any length of time subjected to an odor it very soon loses all power of being acted upon by this exciting agent; and as these odors are very gradually developed, the subject may at no time become aware of their presence.

O. Perrault demonstrates that some animals, due to the anatomical arrangement of their olfactory organs, can only perceive odors brought to the olfactory region by the expiratory air. The writer has known patients to perceive the odor of iodoform several days after this substance has been blown into the middle ear through the Eustachian tube. There is only one way in which the odor of this substance could come in contact with the olfactory region, viz., being borne there through the posterior nares by the expiratory current of air.

STRUCTURE AND MODE OF TERMINATION OF THE OLFACTORY NERVE.—The olfactory nerves, as stated above, after leaving the olfactory lobes, pass downward in the form of numerous minute filaments through the perforations in the horizontal plate of the ethmoid, and form a plexus in the structure of the mucous membrane, lining the upper portions of the nasal cavities. Todd and Bowman describe the filaments composing this plexus as differing very much in structure from those of the ordinary cephalic nerves; as containing no white substance of Schwann; as nucleated and finely granular in texture; and as altogether bearing a close resemblance to the gelatinous form of nerve fibers. These olfactory nerve filaments, according to Schultze, terminate as thin fibers or rod-like bodies, upon the same level as the proper epithelial cells, and present, when traced inward, a series of varicose swellings which are *directly continuous* with the out-runners of more deeply seated nerve cells. The olfactory nerve undergoes in old age an atrophy more or less complete, which corresponds with the loss or diminution of the sense of smell. M. L. Prebeau has published in the *Gazette Medicale*, a very interesting article upon this subject, and in a number of carefully collected observations, has been able to demonstrate the alterations that the olfactory nerves undergo during the progress of age. He states that in the adult and in cases where the sense of smell is intact, the olfactory nerves are remarkable for their volume. The peduncle is white, and terminates in a voluminous bulb, rosy in color, and completely filling the groove upon the horizontal plate of the ethmoid. In old age, on the contrary, and in cases where the sense of smell is obtuse, the olfactory nerves become shriveled, semi-transparent, and of a grayish color, the olfactory bulb is diminished in volume, and no longer fills the groove. Microscopic examination shows us in the nose of the adult, a great richness of nervous tubes; and one finds, it is true, some livid corpuscles, but these are few in number and disseminated. In the semi-transparent nerves in the aged these nervous fibers are not numerous, and in some parts are completely absent. There are, besides, a very great accumulation of the amyloid bodies found chiefly in places where the nerve fibers are absent; and this alteration coincides with the age of the subject, and, above all, with the diminution more or less great, of the sense of smell. Dupuytren claims that odors can be perceived by injecting an odorous substance into the veins, and states that he injected into the veins of a dog, a substance of an odorous nature, and that the dog elevated his head, and smelled around to find whence the odor came.

Sᴇɴsᴇ ᴏғ Sᴍᴇʟʟ.—The sense of smell is that which gives us the idea of odors. It is the sense of smell by which we perceive and distinguish the different impressions made upon the terminal filaments of the olfactory nerve, by substances of an odorous nature. What is meant by the term odor is not as easy of explanation as it would at first appear. Some consider odors as a kind of vibratory movement of bodies, which, propagating themselves in the form of an imponderable fluid, are transmitted to the olfactory mucous membrane. Others consider odors as impalpable particles of bodies in the form of vapor, having a close analogy to odorous gases. This last theory, which is most generally accepted, is the more correct of the two. Odorous substances lose, during the course of time, their characteristic odor, and with their odor the volatile particles with which this odor is associated, this being accompanied in the case of many substances with a very appreciable loss of weight. In some cases one cannot detect any loss of weight dependent upon loss of odor, but in these cases the actual loss of weight is rendered inappreciable by the substances absorbing moisture from the atmosphere. The presence of minute particles of odorous substances in the atmospheric air is readily and quickly detected by the olfactory mucous membrane. Our daily experience clearly demonstrates this. For instance, paper which has contained tobacco or snuff, and which has become impregnated with the odors of these substances, will retain traces of their characteristic odors for months, and even years afterwards. It is quite easy to demonstrate the amount of an odorous gas necessary to be present in the atmospheric air in order to be appreciable to the sense of smell. This is obtained by taking a given amount of atmospheric air and slowly adding to it the gas to be tested, until its presence is appreciable to the sense of smell, and then estimating the relative amount of the two gases present. One could in this way tabulate the different odorous gases, ranking them according to their relative energy upon the olfactory mucous membrane. In this table sulphuretted hydrogen would perhaps hold the first place, as it can readily be detected when present, in the proportion of two parts, to two million of atmospheric air. The sense of smell is in many cases a reagent far more sensitive than those of chemistry, for man can recognize by their odors the presence of certain bodies in the air, when the reagents of chemistry are powerless to detect them. This statement will not surprise us if we bear in mind that many of the changes produced in the air by the presence of odorous substances, are still involved in obscurity, and that the presence of the perfume of flowers, and other odors in the atmospheric air, cannot be demonstrated by any power known to chemistry. Linné divides odors into several classes: viz: aromatic, fragrant, ambrosial, luscious, fœtid, repulsive, nauseous. Odors are absorbed by the different colors, but not by all colors in the same proportions. The colors as regards their powers of absorption are ranked respectively: black, blue, green, red, yellow, and white. In the olfactory mucous membrane there is always present more or less pigment, and it has been found that those animals whose olfactory region presented the largest amount, and the darkest colored pigment, are endowed with the greatest sensibility to odors. Those diseases which destroy the pigment of the body are always accompanied with impairment of the sense of smell. A striking example of this is the well known case of the colored boy of Kentucky, who being very dark, lost all his pigment, and gradually became very white. During the progress of this change he became quite deaf, and almost entirely lost the sense of smell; and it was supposed that the loss of these two senses was due to the destruction of pigment in the aural labyrinth, and in the olfactory mucous membrane. The sense of taste and the sense of smell are so closely connected that there is great difficulty in clearly separating them. Brillat-Savarin says, "Pour moi je suis non seulement persuadé que sans la participation de l'odorat il n'y a pas de dégustation complète, mais encore je suis tenté de criore que l'odorat et le goût ne forment qu'un seul sens, dont la bouche est le laboratoire et le nez la cheminée, ou pour parler plus exactement, dont l'un sert à la dégustation des corps tactiles et le autre à la dégustation des gaz."

The sense of taste proper, is only capable of appreciating whether a substance is sweet or acid, salt or bitter, and has no power of detecting the different savors. This fact is often clearly demonstrated in cases in which the sense of smell is destroyed, for in such cases the afflicted person states that he no longer relishes his food, that all food tastes very much the same, that nothing seems to have any flavor. The importance of the sense of smell among the lower animals in guiding them to their food, and in warning them of the presence of danger, is well known; but all animals do not seem to be equally endowed with the sense of smell, or rather their respective sense of smell is acted upon by two distinct classes of odors. The carnivora have the power of detecting most accurately the odors given off by animal matters, and can distinguish animals by their respective scent—a power which stands them in great service in hunting their prey; but, on the other hand, they appear to have very little sensibility to the odors of plants and flowers. The herbivora are peculiarly sensitive to the odors arising from the vegetable kingdom, while but little sensitive to those of an animal origin. Man is inferior to many animals of both classes in respect to the acuteness of the sense of smell; but his susceptibility to odors seems to be more extended and uniform, though not so acute. Of the domestic animals a hunting dog is endowed with the most acute sense of smell; that is, he is the most susceptible to odors of an animal origin, and affords us many instances of the great acuteness of which this sense is capable. He is able to do that which but for its daily occurrence would surprise us, viz: to track his master along a crowded thoroughfare, and across whose tracks hundreds of people have passed and repassed, and whose scent must have mingled with his and rendered it inconceivably faint. This feat appears all the more remarkable when we recall the fact, that no portion of the body of his master comes in contact with the ground, and that it is through the shoes only that any scent can be deposited upon the earth, unless we can conceive that there is continually given off by our bodies an odorous gas, which settles upon the ground as we move along.

BIRDS.—Birds have no sinuses, but they have on either side three turbinated bones, and with them the olfactory surface is not extensive. The olfactory lobes, from whence proceed the olfactory nerves, are well developed. Birds of prey and those palmipeds living on live fish, are specially distinguished for having well developed olfactory lobes. As a rule birds do not have a very acute sense of smell, and it is rather by their sense of sight, which is remarkably acute, that they are guided to their food.

REPTILES.—The nasal cavities of reptiles are very small, being composed of two tubes communicating with the exterior through the nares, and opening into the mouth by means of two small holes in the palatine arch. Only the scaly reptiles have turbinated bones. The non-scaly are less developed in this respect, the olfactory tube being merely furnished with a mucous membrane lining.

FISH.—In fish the olfactory organ consists of two small cavities terminating in a cul de sac, communicating with the exterior by means of two small openings, but having no communication with the respiratory apparatus. The bottom of this olfactory cavity is furnished with numerous folds spreading out from a common center. The water which bears the odor to these cavities can only be slowly renewed, for there is no constant current entering them. The sense of smell in fish is therefore very imperfectly developed.

THE INVERTEBRATES.—Certain invertebrates, especially the insects, have well developed olfactory organs. Flies, bees, and ants are attracted from comparatively great distances, by the odors arising from certain sweet substances. Some physiologists think that the olfactory organ in these insects is seated upon the antennæ, or upon the tentacula. Beclard, whom I have already quoted, says that Cuvier and Duméril believed that the organ of olfaction is located upon the stigmata, small protuberances placed at the opening of the trachea, so that the respiratory air may pass over their surfaces.

The acuteness of the sense of smell possessed by man, when compared with that of the lower order of animals, is found to be vastly inferior. But among savage tribes, whose senses are more cultivated than those of the civilized, more direct use being made of the power of observation, the acuteness of the sense of smell is almost equal to that of the lower animals. It is *stated by Humboldt*, that the Peruvian Indians are able to distinguish in the darkness of the night, the different races, whether European, American Indian, or Negro. In regard to the latter race, the fact of being able to distinguish them from all others is not a test of the acuteness of smell which should surprise us, for the peculiar odor emanating from their bodies is of such a nature, that when once perceived it is not readily forgotten. The Arabs of the Great Desert are able to distinguish the odor of a fire some thirty miles off, but this is not a very striking example of the acuteness of the sense of smell, for fires have been perceived from a much greater distance. The sense of smell, as is also true of the other senses, is susceptible of marked improvement under cultivation, and when the senses of sight and hearing are lost, it becomes more acute. This is well demonstrated in the case of James Mitchell, who was blind, deaf, and dumb from his birth; yet was able by the sense of smell to distinguish his friends, and detect the presence of a stranger. Carpenter records the case of a blind gentleman, who had an antipathy to cats, and was possessed of a sensibility in this respect so acute, that he perceived the proximity of one that had been shut up in a closet adjoining his room. The same author states in his work on mental physiology, that when the will is in abeyance the special sense becomes more acute, and he cites some very interesting cases in demonstration. He says that he has known a youth in the hypnotized state, to find out by the sense of smell the owner of a glove, which was placed in his hand from amongst a party of more than sixty persons; scenting out each of them after the other, until he came to the right individual. In another case the owner of a ring was unhesitatingly found out from amongst a company of twelve, the *ring having* been withdrawn from the finger before the *somnambulist* was introduced.

In regard to pleasant and disagreeable odors, Baker says, that opposed to the sensation of an agreeable odor is that of a disagreeable or disgusting odor, which corresponds to the pain of disharmony of colors, and dissonance in the other senses. The cause of this difference in the effect of different odors is unknown, but this much is certain, that odors are pleasant and offensive in a relative sense only; for many animals have their existence in the midst of odors which to us would be entirely disagreeable. A great difference in this respect is observed amongst men. Many odors generally thought agreeable are to some persons intolerable, and different persons describe differently the sensations that they receive from the same odorous substances. There seems also to be in some persons an insensibility to certain odors comparable with that of the eye to certain colors, and among different persons as great a difference in the acuteness of the sense of smell, as among others in the acuteness of the sense of sight. We have no exact proof that a relation of harmony and disharmony exists between odors, as between colors and sounds, though it is probable that such is the case, since it certainly is so with regard to the sense of taste, and since such relation would account in some measure for the different degrees of perceptive power in different persons: as some have "no ear for music," as it is called, so others have no clear appreciation of the relation of odors, and therefore little pleasure in them. The same odors affect different people in a different manner, as stated above, and an odor which is agreeable to some is very offensive to others; for in certain cases we find what is generally considered a perfectly innocuous odor, causes an individual peculiarly susceptible to its influence to faint, to become nauseated, or otherwise injuriously affected.

CHAPTER III.

INSTRUMENTS.

The instruments required for the careful and thorough examination in the ordinary treatment of the diseases of the nose are not many in number and may be described as follows:

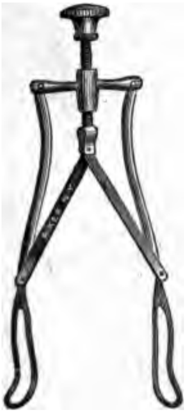

FIG. 8.

THE HEAD MIRROR.—The mirror is the same as is used for laryngoscopy—the focus power should be from about ten to twelve inches. It is a matter of individual choice whether it is perforated through the center or not.

THE SPECULUM. The speculum for dilating the nostrils, and which I regard as the best, is Fraenkel's. (Fig. 8.)

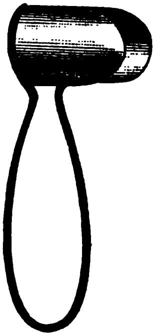

FIG. 9.

The tension of the parts produced by specula made to open by a spring frequently causes such pain that many cannot endure it. Thudichum's and Goodwillie's are the best of this kind and are largely used. (Figures 9 and 10).

TONGUE DEPRESSOR. Türck's is probably the best. I have used no other for many years. It consists of a hooked handle and blades of several sizes—the smallest sizes as represented in figure, will answer for the largest as well as the smallest mouths.

RHINOSCOPE. Consists of a very small mirror at right angles to the shaft, although we occasionally meet with cases in which the largest laryngeal mirror can be tolerated.

I always use a larger one whenever practicable, especially if I wish to demonstrate the view to others who may be looking over my shoulder.

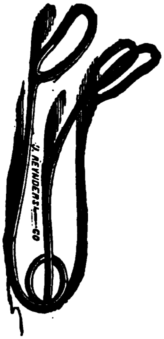

FIG. 10.

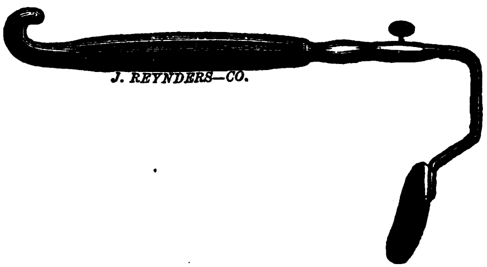

FIG. 11.

NASAL PROBE. A nasal probe made of silver, heavy, flat and probe pointed, an excellent instrument for ascertaining the presence of necrosed, or denuded bone, or a foreign body: its flat shape enables one to pass it easily through the meati for the purpose of ascertaining whether or not stenosis or stricture exists. (Fig. 12.)

COTTON HOLDER. A cotton holder, consisting of an instrument slightly forked at one end, for the purpose of enabling it to firmly hold the cotton wool, which is wrapped tightly around it, by rotating the button at the end held in the hand. This instrument I use for making topical applications of solutions to any part of the anterior or posterior nares. (Fig. 13.)

For applications to the posterior nares, I also make frequent use of the POST-NASAL BRUSH—which I devised *some years ago.* It consists of a small soft brush of camel's hair, screwed on a rod the extremity of which is bent at an angle of 45°, and the rod inserted

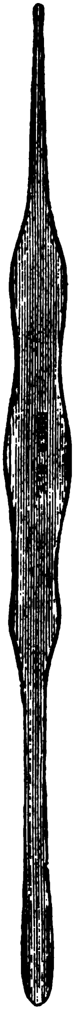

Fig. 12.

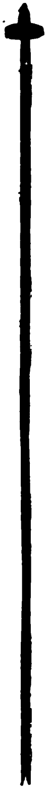

Fig. 13.

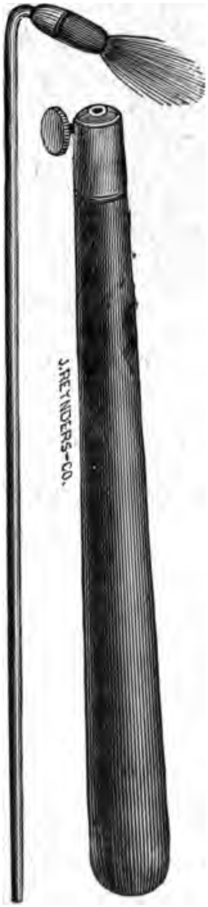

Fig. 14.

into either a permanent or shifting handle. The advantage this simple instrument possesses over any other I have seen is that it can be introduced behind the velum without coming into contact with the posterior wall of the pharynx, by which retching, gagging and nausea are avoided. By means of it the solution can be thoroughly applied to the posterior surfaces of the turbinated bones, septum and the spaces between the septum and the bones.

The posterior surface of the velum can also be touched, as well as the vault of the pharynx and the orifices of the Eustachian tubes. (Fig. 14.)

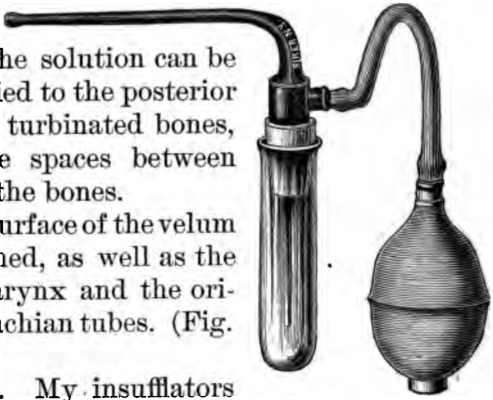

FIG. 15.

INSUFFLATORS. My insufflators are constructed of vulcanized rubber; for the anterior nares a straight instrument, and one turned to the angle of the post-nasal brush for the posterior nares; but in the majority of cases the straight one will suffice for the posterior as well as the anterior surfaces. It is only a question of force by which the powder is propelled; the handball may be used or the compressed air from a large receiver. (Figs. 15 and 16.)

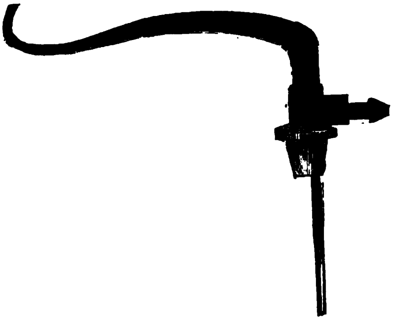

FIG. 16.

For the thorough cleansing and washing out the parts, I use a Sass' straight spray tube, the spray propelled by the compressed air from a large receiver. I rarely employ an upward spray from a tube introduced behind the soft palate.

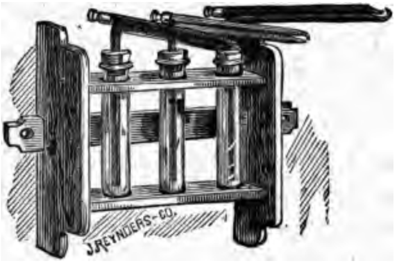
J.REYNDERS-CO.

FIG. 17.

With the above outfit the surgeon has everything required for the daily treatment of ordinary cases. Instruments for the removal of tumors, polypi, necrosed bone, and operations upon the deflected septum, etc. will be referred to and described, under the appropriate chapters.

CHAPTER IV.

RHINOSCOPY.

Although the idea of examining the parts above and behind the soft palate was conceived in the early part of the present century, it remained for Czermak,[1] in 1858, after having given us the laryngoscope, to make available as a practical aid to the diagnosis of disease, the rhinoscope. He was the first to view and to demonstrate to others in the living subject the parts contained in the naso-pharyngeal space.

ANTERIOR RHINOSCOPY.—Formerly, the patient was placed opposite a window, in the sunlight if possible, his head thrown back; the surgeon facing him pressed rather forcibly upon the tip of the nose, upward and backward. The alæ were forced upward and outward by this procedure, and the operator was enabled to see slightly beyond the orifices of the nostrils. An ocular examination of the posterior nares was out of the question. A digital examination, when the existence of tumors was suspected, was resorted to by introducing the index finger into the mouth, and carrying it upward and backward behind the soft palate. In some cases the operator would introduce the index finger of one hand through one nostril, and that of the other hand in the manner described, through the mouth and behind the soft palate, and endeavored thus to ascertain the presence of tumors in the nasal region. This not only inflicted pain and distress upon the patient, but would invariably provoke nausea, retching, and in some cases vomiting. The present method of examining is thorough and extremely simple. That of the anterior nares is made by placing the patient in a chair opposite the operator; a strong light such as is used in the examination of the larnyx, is placed immediately behind and on a level with the ear of the patient, the head is thrown slightly backward and the nostril dilated by means of a speculum and stretched outward to its fullest extent without inflicting pain upon the patient. Having introduced the speculum, the rays of light are then reflected from the mirror worn upon the forehead of

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[1] On the Laryngoscope and its Employment in Physiology *and Medicine.—CZERMAK.*

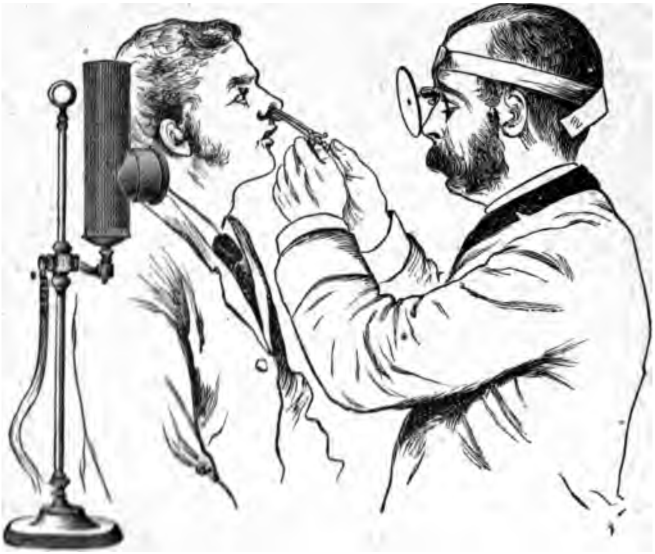

FIG. 18.

the operator, into the nares, first one side then the other. As the light is feeble, dull, or powerful, so will the illumination be more or less perfect. There are several other varieties of specula, which are referred to in the chapter on instruments.

POSTERIOR RHINOSCOPY.—The examination of the posterior nares, although very simple in the way of instrumentation, is in reality one of the most delicate manipulations known to surgery. So difficult is it that writers have asserted and surgeons declared that, in the majority of a given number of cases, the examination will be found impracticable, by reason of the difficulties encountered in placing the mirror between the soft palate and posterior wall of the pharynx, from want of space, or upon the fact that the base of the tongue may be so large as to almost fill the entire fauces ; or through nervousness on the part of the patient the soft palate may retract and be drawn upward and backward against the wall of the pharynx, rendering it impossible to introduce the smallest mirror between it and the pharynx. At my clinic at the Metropolitan Throat Hospital several years ago, I demonstrated with the aid of my assistants, (taking cases as they reported for treatment,) that about ninety-six out of every hundred cases could be examined, if not for purposes of demonstration to others, at least sufficiently to enable one to make a diagnosis of the pathological changes. Of course, very young children, and those having malformation of the parts, were excluded from the examinations. Czermak says the difficulties of rhinoscopy, unless favored, for example, by insensibility, by fissure, or partial deficiency of the velum, are much greater than those of the laryngoscope, but that perseverance and practice can overcome these obstacles in the one case as well as in the other. Czermak and the rhinoscopists of his day, invariably used the palate hook in addition to the spatula and the small mirror. I have rarely found it necessary to resort to the hook for the purpose of drawing the palate downward and forward, because I have learned that by the exercise of a little patience I can always obtain the view without it. My method of examining is as follows: The patient is placed directly opposite me on a chair corresponding in height and size to the one upon which I sit. The light is placed slightly behind and to his right, and on a level with the lower part of the ear, the head erect, or inclined in the very slightest degree backward. The head mirror for reflecting the rays of light into the fauces should be worn over the right eye. The patient is then directed to open his mouth widely, to draw in his tongue and let it drop quietly upon the floor of

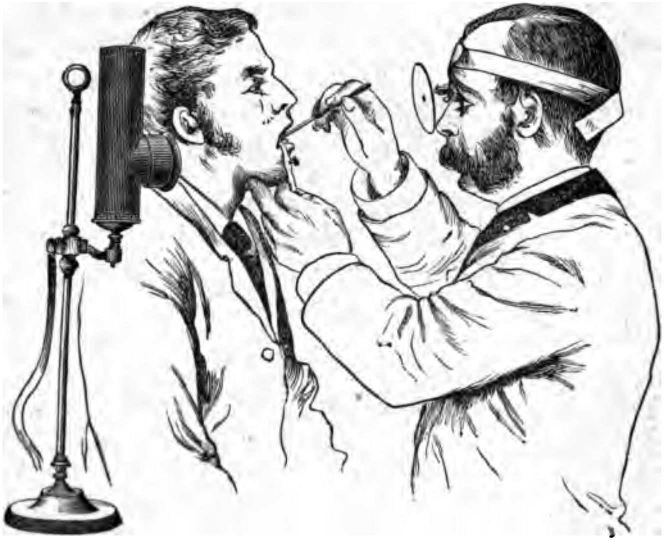

FIG. 19.

the mouth. Taking the spatula in my left hand, I introduce it into the mouth and carry it back to the arch of the tongue; I then force that organ downward and forward, using gentle but firm pressure. Having the tongue well out of the way, and having obtained all possible room between it and the soft palate and the posterior wall of the pharynx, I introduce the rhinoscope, carrying it to the right or left of the uvula; once behind that appendage, I move the mirror gently to the median line. In well trained cases, or not very sensitive throats, it may rest upon the posterior wall of the pharynx and the stem upon the tongue. But this position is by no means necessary, and usually it would be well to avoid it. Having the mirror properly placed, you take as your starting-point, or guide, or landmark, the posterior border of the vomer or septum, and having examined its condition carefully you turn your mirror to the left or right, and without actually disturbing its position or relation to the parts to be examined, you elevate or depress it, and the several parts; viz: the turbinated bones, the meati, the Eustachian orifices, the vault of the pharynx, the posterior surface

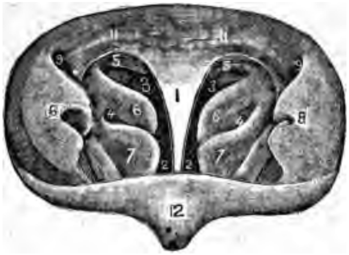

FIG. 20.—THE RHINOSCOPIC IMAGE.

1. Vomer or nasal septum. 2. Free space of nasal passages. 3. Superior meatus. 4. Middle meatus. 5. Superior turbinated bone. 6. Middle turbinated bone. 7. Inferior turbinated bone. 8. Pharyngeal orifice of Eustachian tube. 9. Upper portion of fossa of Rosenmueller. 11. Glandular tissue at the anterior portion of the vault of the pharynx. 12. Posterior surface of the velum.—COHEN.

of the velum, the fossæ of Rosenmüller, can all be made to pass in review, as it were, before you. Nothing, as I have before remarked, requires such careful and delicate manipulation as this examination. In the first place, the intelligence of the patient may greatly aid, or his stupidity retard your examination; especially will the latter be the case among the class of patients you meet with in dispensary practice; you will find it difficult to make them comprehend exactly what you wish them to do. They will open their mouths too wide, which will cause the velum to retract against the posterior wall of the pharynx; or they will persist in letting the tongue project beyond the teeth, in which case pressure upon its arch for the purpose of obtaining the requisite room or space between it and the velum will avail nothing. Again, the tongue frequently proves very refractory. If force is used, it will resist, and retching will certainly be produced, and the velum will involuntarily retract against the pharynx. Again, even after the tongue ceases to give trouble, the manner of breathing by the patient may defeat or prevent the examination; he may hold his breath, or breathe too rapidly, or with his mouth only, all of which will interfere with the examination. If you lose your patience, the patient will, in the effort to obey, become nervous, excited and unable to control the involuntary movements of tongue, velum, and pharynx. The only way to manage this class of patients is to tell them to open the mouth, to keep the tongue in, and then in placing the spatula or depressor, should the tongue prove refractory, to use no force, but let it remain quietly in position. The mere weight of the instrument will have more effect in overcoming the involuntary spasm of the muscles than the exercise of all the force it would be prudent to make use of; a minute or two will usually accomplish this. The patient should then be told to breathe quietly and naturally through the nose, as if the mouth were closed. If a satisfactory examination cannot be obtained at the first sitting after a few attempts, you should not persevere. In the second or third sitting you will probably succeed, and difficulties which at first appeared insurmountable will pass away. It is impossible to obtain a view of the whole naso-pharyngeal space from holding the mirror in one position. If it is desired to obtain a view of the vault of the pharynx, it should be held almost vertically; if of the posterior surface of the soft palate, it should be directed forward, that is, toward the teeth; if of the Eustachian orifices and the turbinated bones, it should be directed first to one side and then to the other; and if of the posterior wall of the pharynx, it should be held obliquely with the back or metal part of the mirror turned slightly toward the base of the tongue.

The method suggested by Surgeon-General Wales,[1] U. S. N., consists in passing the end of a piece of cord, or tape, through each nostril, bringing it out through the mouth, and then passing it over the ear, on each side, and tying it behind the head. It affords an excellent view of the naso-pharyngeal space, but there is rarely necessity for resorting to it except in cases of prolonged operation.

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[1] *Wales.*—New York Medical Record, 1875, p. 785.

CHAPTER V.

RHINITIS.

Before the present method of making examination of the nasal region was introduced, all conditions of that organ accompanied with a discharge, either through the nostrils, or posteriorly from above the soft palate, or naso-pharyngeal space, were classed under the general term catarrh; no matter what caused the trouble or annoyance; whether nasal polypi, tumors, a foreign body, a deflected, eroded or ulcerated septum, an exostosis, or an old fracture causing stenosis; the discharge gave the name, and routine treatment by injections, douches, caustics, and powders locally; and tonics, or alteratives internally, was blindly resorted to. Of course, failure resulted in a large number of cases. Catarrh is derived from the Greek words "κατα," down, and "ρεω," to flow, and takes its name rather from the symptom, that is, the discharge, than from any properly rocognized or understood lesions, by those who conferred the name.

The ancients, even Galen and Hippocrates, believed that the discharge came from the brain, and that it was nothing more than a cerebral purge. It was not until the seventeenth century, about 1660, that Schneider, of Wurtemburg, after whom the Schneiderian membrane has been named, demonstrated in a comprehensive treatise, entitled "De Catarrhis," that [illegible]isted no canals between the nose and the brain. He taught that the secretion, or humor, came from the blood by the mucous membrane, by, what he termed, a sweating process. The term catarrh, then, as usually employed, I shall not recognize in these pages as a disease, but merely as a symptom of a pathological condition. I shall use the following terms to designate the several conditions that have been known and described as nasal catarrh. RHINITIS CATARRHALIS ACUTA. (COLD IN THE HEAD. CORYZA.) RHINITIS CATARRHALIS CHRONICA, RHINITIS CATARRHALIS CHRONICA HYPERTROPHICA, RHINITIS CHRONICA ULCEROSA.

ACUTE RHINITIS is perhaps, of most frequent occurrence. It may be produced by sudden cooling of any part of the body, such as the feet by getting them wet; by a draft of cold air from an open window upon the neck or back; by inhaling irritating gases, or powders, or dust from the atmosphere; by the pollen of certain plants (which produce hay fever). It may be merely an initial of acute infectious disease, such as measles, scarlatina, etc. Young persons are most subject to it, especially those of strumous diathesis; those whose vital powers are lowered by sickness, or who are prostrated by any cause whatever.

SYMPTOMS: A feeling of more or less lassitude, perhaps febrile excitement; difficulty in breathing through the nose from partial or complete occlusion of the air passages, caused by infiltration of the mucous membrane covering the turbinated bones and septum. This swelling comes on rapidly and may disappear almost instantaneously upon any sudden clearing of the nose by blowing, coughing, or forcibly breathing through it. Sneezing, as well as sudden *excitement* or shock, gives temporary relief.

The cause of this, as shown by Bigelow,[1] of Boston, is the existence of a true erectile tissue on the turbinated bones, especially the middle and lower, closely resembling the cavernous structure of the penis; collapsed, the outline dimensions are nearly those of its denuded bony framework; distended, it becomes an angular turgid mass of uneven surface and livid color, completely closing the lower passages. A pouch-like dilatation projects from the rear of the bone, increasing its length. It is this reticulated pouch that is seen with the mirror at the back of the nares. The septum also swells from infiltration into its sub-mucous tissue. Woakes[2], in speaking of acute rhinitis, thus describes what he terms the mechanism: "There is first, vessel distension, occasioning swelling; dryness of the epithelial covering; then effusion of serum which escapes from the free surface, carrying with it the mucus also found in excess in the follicular structures of the membrane, and later, also, the discarded epithelial cells from their different strata, in varying stages of growth and degeneration. This mixture of serum, mucus, and cells, constitutes the flux of an ordinary catarrh, which, under favorable circumstances, rapidly ends in resolution, that is, in the restoration of vessel tonus and consequent cessation of symptoms."

Acute rhinitis sometimes attacks whole communities, but this is no evidence of its contagiousness, as claimed by some writers. Occurring in newly-born children, syphilis should always be suspected. The duration of an ordinary attack is from three to six days. It always terminates in recovery, but a recurrence or succession of attacks may develop a chronic condition of hypertrophy of the mucous membrane.

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[1] *Bigelow.*—Bost. Med. Sur. Jour., April 29, 1875.

[2] *Woakes.*—Naso-Pharyngeal Catarrh.

Treatment.—If there is much febrile excitement, aconite, in small doses frequently repeated for from ten to twelve hours, will be found very useful. A saline cathartic, warm drinks, and, if possible, confinement in a room for a day or two, of even temperature over seventy degrees. I have frequently cut short an attack in my own case by taking at the beginning, and just before retiring at night, twenty grains of Dover's powder. Prout, of Brooklyn, claims that tincture of iron in large doses will abort it. A spray of boracic acid, grs. x.; aq. laurocerasi, ℥i.; aq. ℥i.; warm and used frequently during the day will be found very soothing. A snuff or insufflation of

Morph. sulph. . . . . gr. i.
Bismuth sub-nitratis,
Pul. amyli, aa. . . . . ʒi.
M.

Sig. Used locally will give great relief; or a powder consisting of the following, to be used several times a day:

℞.
Zinci oxidi, ... grs. viii
Pul. amyli, ... ʒiss
M.

A small quantity of succus conii, about ʒi., to a pint of hot water. If the patient breathes the vapor of this mixture from a sponge held to the nostrils great relief will be experienced.

CHAPTER VI.

CHRONIC RHINITIS.

(CHRONIC NASAL CATARRH.)

Chronic rhinitis is a chronic inflammation of the mucous membrane lining the anterior and posterior nares. The simple uncomplicated form is usually without ulceration, which, when present, is termed ozæna, or ulcerous rhinitis, and will be considered in a subsequent chapter.

ETIOLOGY.—The most common cause is a succession of acute attacks, especially if proper treatment has been neglected. The inhalation of irritant gases; foreign bodies in the form of impalpable dust from the streets, impregnating the atmospheric air; the alternations of temperature in variable climates; the sudden changes which frequently take place within a few hours, finding us unprepared in the way of proper clothing; sitting in drafts of cold air; living in overheated rooms or houses imperfectly heated; cause acute rhinitis. Since the introduction of hot air furnaces, there has undoubtedly been an increase in the number of cases of this disease. The occupation or profession of the individual has frequently much to do in developing the disease. For instance, those whose vocations compel them to inhale the noxious vapors arising from mercury, arsenic, and bichromate of potassa; the workers in tobacco factories, in needle factories, in cotton mills; in fact, any vocation which compels one to inhale irritant gases or impalpable foreign bodies, is liable to occasion the disease.

These causes produce hyperæmia or local congestion of the mucous membrane, from which hyper-nutrition results, and the frequent recurrence of this condition will, in course of time, develop into true hypertrophy.

The imprudent practice of sleeping during the inclement months of winter, in a chamber with the window raised from the bottom, or lowered from the top, is not an unfrequent cause, in those who lead quiet, sedentary lives, shut up during the day in perhaps overheated rooms, with the body well protected by suitable clothing; and then during eight or ten hours, as the case may be, lying in a state of inactivity in bed, with nothing to protect the body but the bed clothing; the warm flannels worn during the day removed and replaced by linen or cotton garments, the temperature of the room perhaps from thirty to fifty degrees lower than they have been accustomed to during the day.

In addition to the common causes enumerated above, it may be traced to diathesis. Scrofulous and syphilitic subjects are very predisposed to chronic rhinitis, although in the absence of an history and other symptoms of syphilis there is nothing specially characteristic of the disease.

In addition to these varieties, others are recognized by certain authors, notably Courjon,[1] who describes an herpetic variety. [2] Shurley, of Detroit, has also described a chronic rhinitis which he attributes to herpetic and eczematous eruptions.

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[1] *Courjon, J. X.*—Con a l'étude de le rhinite, etc., Paris, 1881. No. 215.

[2] *Shurley.*—*Trans. of* Mich. State Med. Soc., 1882.

There is a form of chronic rhinitis with which I have frequently met, and which I regard as invariably connected with an acquired gouty or rheumatic dyscrasia. The subjects are generally of the male sex, about, or somewhat beyond middle age, of full habit, with a tendency to corpulency, engaged in sedentary occupations: indisposed to physical exercise or exertion, in the habit of indulging freely in the pleasures of the table, eating rich and highly seasoned food, and, although not addicted to alcoholic excesses, partaking regularly and freely at dinner of red wines.

In these cases attacks of indigestion from an excess of food producing hepatic engorgement, are not unfrequent. The patients will complain of an uneasy sensation in the throat and an annoying cough accompanied with excessive hawking of mucus, which is sometimes streaked with blood; impaired nasal respiration, headache and inability to sleep soundly.

Frequently these symptoms are precursory of an attack of gout.

PATHOLOGY.—Chronic rhinitis of itself is rarely a cause of death. Consequently post-mortem examinations on those affected with it during life are not often made. When made we find hypertrophy of the mucous membrane covering the turbinated bodies, especially the middle and inferior, with, in some cases, actual enlargement of the osseous frame-work, also thickening of the mucous membrane covering the cartilaginous septum.

SYMPTOMS.—An increased discharge of the glandular secretion from both nostrils, although it may be greater from the one side than the other, is a prominent and never-failing symptom; also a dropping from the posterior surface of the palate into the mouth or pharynx. This dropping or tendency to flow backward into the mouth is explained by Professor Harrison [1]Allen, of Philadelphia, by the gentle inclination of the nose backward and the dip of the turbinated bones. Except in the atrophic variety there is always more or less obstruction to the nasal breathing, through one or both nostrils; there is also a sense of fullness or stuffiness; pain across the brow, and in some cases impaired hearing; sneezing—but this latter not always a symptom. If ulceration is present, or if the secre-

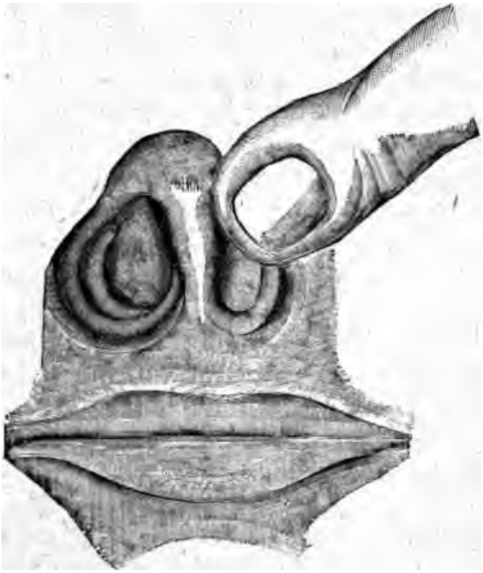

FIG. 21.

Hypertrophy of the anterior extremity of the right inferior turbinated bone, with slight deflection of the septum to the left. From a drawing by PROF. LEFFERTS.

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[1] *Allen, H.*—Amer. Jour. Med. Sci,. Jan., 1880.

tion is permitted to remain in the nasal cavity by the patient; or if he neglects to wash or cleanse his nose frequently, there will be a decidedly offensive odor.

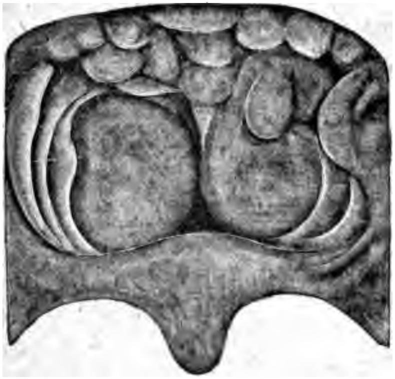

FIG. 22.

VARIETIES. — In by far the greater number of cases we find hypertrophy of the mucous membrane covering the turbinated bones, the septum, and in some cases the alæ and floor of the nostrils; in color it is deep red or livid. The inferior meati appear obliterated, producing almost complete obstruction to the passage of air by inspiration or expiration. In the rhinoscopic mirror, in extreme cases, the posterior border of the septum will appear infiltrated and baggy, the turbinated bones, especially the inferior will resemble in size, form, and color gelatinous polypi, and to such an extent is this the case that beginners or the inexperienced are very apt to mistake them for such. The vault of the pharynx will appear thickened from hypertrophy of the mucous glands or follicles, such as we find upon the posterior wall of the pharynx lower down. The posterior surface of the

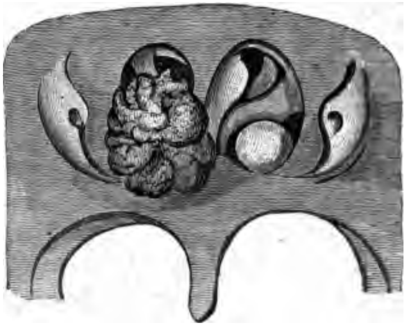

FIG. 23.

velum will appear reddened, angry-looking, and frequently one finds numerous small erosions of the mucous membrane. The mucous membrane surrounding the Eustachian orifices may be likewise involved.

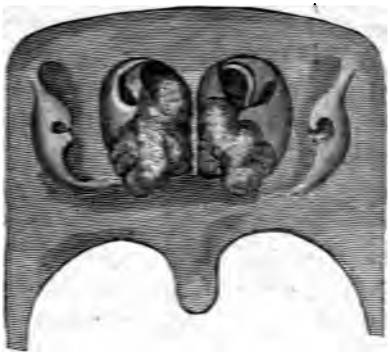

FIG. 24.

The above and two preceding cuts from drawings by Professor Lefferts, who kindly placed them at my disposal, accurately represent the condition of the chronic hypertrophic form of rhinitis so frequently observed in the rhinoscope.

In figure 22, we find hypertrophy of the mucous membrane covering both inferior turbinated bones, resembling very much gelatinous polypi, and also hypertrophy of the glandular tissue of the vault of the pharynx. In figure 23, the hypertrophy is confined to the right-inferior turbinated bone, with sub-mucous infiltration of the left side of the septum.

In figure 24, we have excessive hypertrophy of the mucous membrane, covering the posterior extremity of both inferior turbinated bones.

In the atrophic variety the membrane appears thin, anæmic-looking, and is merely the result or sequence or later stage of the hypertrophic form, which was not permanently relieved, or cured, by the treatment that may have been instituted. It is caused by the ulceration or breaking down of the numerous secreting follicles which abound in the nasal mucous membrane, and is analagous, pathologically, to that condition which is recognized as pharyngitis sicca—it is impossible for this variety to occur, unless the mucous membrane has previously passed through the hypertrophic stage, however slight it may have been—the patient not having sought for treatment, is not evidence of its previous non-existence. The fact remains that when applying for treatment, they frequently make the statement that they have suffered from catarrh for years, or at least sufficiently long for the hypertrophic stage to have formed, and passed into the atrophic. The secretion in both varieties undergoes changes; it may be thin, watery, or thick, viscid, tenacious; and in the atrophic variety, hard, dry crusts of a muco-purulent character are liable to form. Sometimes the principal symptom of chronic rhinitis is a constant and copious discharge of watery fluid from the nose. [1] Spiers relates the following case:

"In November, 1875, T. R——, aged 55, a tailor of medium height, spare and delicate looking, consulted me as to a constant dropping of a clear watery fluid from his nose, which was, at times, so copious that any garment he was making became completely saturated in a very short time. This, he said, had been going on for nearly a month, and he was at length obliged to give up his work and seek advice.

It commenced at first with sneezing, which he was inclined to attribute to the inhalation of dust arising from some coarse flannel upon which he was employed in making jackets for pitmen. Change of work, however, made no difference in the discharge, which went on as before. He could give no account of any injury received previously, and there was neither pain nor swelling at any time during the continuance of the flow. It came drop by drop, but at times almost so quickly as to form a stream; and on one occasion, when I wanted some of the fluid for examination, an egg-cup, containing nearly an ounce, was filled in a quarter of an hour. I have no note of the specific gravity of the fluid, but it was perfectly clear and colorless, free from smell, and, according to the patient, had no taste.

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[1] *Spiers, W. R.*—Lond. Lancet, 1881. I., 369.

It contained no albumen, and a handkerchief thoroughly saturated with the discharge, on being held to the fire and dried, felt as soft and free from any stiffening as one that had not been used. No excoriation of the lip was produced, no matter how long the discharge was allowed to run over it. At night the patient was compelled to have his head raised till he was almost in a sitting posture, as when lying down the fluid ran back into his throat and caused a choking sensation. He noticed that the flow abated in some degree, but never quite ceased, when he took exercise in the open air—more especially if the atmosphere was clear and frosty, but immediately on coming in doors and entering a warm room it assumed its previous proportions.

The sense of smell is now perfect, and was at no time during the flow interfered with. In this case, as in Sir James Paget's, there was no appearance of disease in the mucous membrane of the nostril, and nothing whatever to indicate the source of the fluid. For nearly nine months the flow continued almost uniformly, certainly without any very decided variation in quantity, in spite of all the treatment adopted. This consisted of glycerine of tannin, tannic acid in powder, and various other astringents locally, while the general treatment aimed at acting on the lower bowel by purgatives in the way of counter-irritation. Liquid extract of ergot and liquor strychniæ were also persevered with for some time, but the case was finally cured (or, at any rate, the dropping ceased gradually day by day, until within a week it had quite disappeared) by keeping the nostrils always filled with goose-grease. Whether in this case the fluid came from the antrum, as post-mortem examination proved it to do in the case recorded by Sir James Paget, of course I cannot say; but, presuming that the cases were identical, it is possible that the goose-grease, which the patient himself applied experimentally, filled up the fissure of communication between the antrum and the middle meatus of the nose, and thereby so altered the existing condition of the structure lining that cavity as to effect a cessation of the excessive secretion. This appears to me to be a reasonable explanation of the result, and quite as satisfactory, therapeutically, as the treatment adopted by Sir Benjamin Brodie, whose case is referred to in Sir James Paget's report, which consisted of injections of sulphate of zinc (gr. iii.—ʒ i.) into the nostril, while the salt was at the same time administered internally.

In the case referred to there were two separate attacks, and, considering that the second lasted twenty-three months, presumably under the above treatment, it cannot be considered very satisfactory. Looking at the case anatomically, injection of solution of the sulphate of zinc, or any other fluid, into the nostril could not exert much, if any, influence over the lining membrane of the antrum.

[1] Lingard mentions a case where continual discharge from the nostrils was caused by a patient drawing water up his nostrils while washing. [2] Tillot relates a case where nine ounces daily of cerebro-spinal fluid, was supposed to come through the cribriform plate of the ethmoid which was thought to have been fractured in

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[1] *Lingard.*—Brit. Med. Jour., Lond., 1878. II., 921.

[2] *Tillot.*—Ann. d'mal de l'oreille, etc., Paris, 1879. V, 31, 38.

removing a polypus. [1] Watson reports a similar case. [2] J. C.——— reports a case of excessive yellow secretion from the nose, which continued for several years. He attributed it to inhalation of mould from damp-books; it was cured by drawing up strong brine through the nose. [3] J. Althaus relates an interesting case of excessive secretion from the nose, supposed to be caused by disease of the fifth nerve—anæsthesia of the nerve corrected by constant voltaic current—fluid slightly alkaline. [4] Paget and others report similar cases, in which the prominent symptom was a continual watery discharge from the nose.

Diagnosis.—There are numerous conditions which simulate all, or nearly all, of the subjective symptoms of chronic rhinitis; such as a discharge from one or both nostrils, a frequent dropping from above and behind the palate, inability to breathe through one or both nostrils, supra-orbital pain accompanied with a feeling of stuffiness, etc. A careful ocular examination, therefore, should always be made in a supposed case of chronic rhinitis, or in any case presenting the subjective symptoms, before beginning treatment.

Polypi, a deflected septum, tumors, an exostosis, a foreign body lodged in the nose, are the most frequent causes, besides chronic rhinitis, of impaired nasal respiration and increased secretion. Adenomata in the vault of the pharynx, or enlarged tonsils by pressing the soft palate upward and backward, may seriously interfere with nasal respiration, and increase the amount of secretion through the nostrils.

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[1] *Watson.*—Diseases of the Nose, Lond., 1875.

[2] —*C*——. *J.*—Brit. Med. Jour., Lond., 1879. I., 175.

[3] *Althaus, J.*—Brit. Med. Jour., Lond., 1878. II., 831.

[4] *Paget, Sir J.*—Med. Press of Cir., Lond., 1878, N. S. XXVI., 432.

TREATMENT OF CHRONIC RHINITIS.—The treatment of chronic rhinitis should be made to conform, or be adapted, as far as possible, to the particular case under consideration. No routine treatment can be said to act well in all cases. The mistake is constantly being made of applying to all cases, indiscriminately, the same remedies. Of all diseases, perhaps, nasal catarrh should not be met in this way. In the first place, make your diagnosis; that is, satisfy yourself thoroughly that the condition is one of the varieties of chronic rhinitis I have just described. Then, before beginning local treatment, endeavor to ascertain if there is dyscrasia, whether from struma, or syphilis, or other causes, and adopt the constitutional treatment to suit the particular case at the same time that you begin with local remedial agents. Cleanliness should be enjoined, and unless it is practiced medicinal agents will be futile. For removing the accumulated secretions we have the nasal douche, nasal syringe, and sprays of various medicated solutions.

Nasal Douche.—Since the objections raised by Roosa[1] and others to this method of cleansing the nares, it has fallen somewhat into disfavor. In my own experience, embracing numerous cases, I can recall but one instance in which otitis media occurred from use of the douche. I attribute this exemption from accident to the directions which I always give the patient in regard to placing the bottle containing the water. [2]Thudichum recommends an elevation of from one to two feet above the head. The force with which the stream of water is made to flow from this height is very great, and I can readily conceive that the water, encountering an obstruction of any kind in either meatus, the force with which it runs would cause it rapidly to be diverted from its course, and the Eustachian orifices would, naturally, furnish an outlet. To diminish this danger I always direct that the elevation should not be higher than the eyebrows, or line of the hair of the patient.

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[1] *Roosa.*—Diseases of the Ear.

[2] *Thudichum.*—Lond. Lancet, Nov. 24, 1864.

[1] Victor Lange, on the use of the Webber nasal douche, says he has never had an accident follow its use, never allowing the patients to use it until they are well instructed how; until they have had directions as regards swallowing, etc.; and to inject through the narrowest side, so that the water may have free exit through the other. [2] Zaufal advises pressing the palate against the Eustachian tubes. Stahls cautions the patient to hold a mouth full of water during the process. [3] Frænkel insists upon the patient producing the sound *ou*, *ou*. This, I think, is scarcely a safe plan, because the deep inspiration that must follow would render patulous the Eustachian orifices. [4] Lefferts never uses the douche; he regards it as "an inefficient instrument for the purpose for which it was designed, insomuch as it does not thoroughly wash or cleanse the nasal cavities, even when carefully used."

Besides aural complications, there is another objection to the douche which, I think, has not been mentioned by writers, but which I have frequently observed in those who have persistently and for a long time made use of it; and this is a flabby, relaxed and supersensitive condition of the pituitary membrane rendering the patient more liable to attacks of acut rhinitis when subjected to sudden atmospheric changes When this condition has been brought about, and i maintained by the constant use of the exciting caus the effect of the usual applications will be interfere with if not counteracted altogether.

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[1] *Lange, V.*—Ann d'mal de l'oreille, etc. Paris, 1879.. V. 337, 349.

[2] *Zaufal.*—Schmidt Jahrbücher, Bd. 183. No. III.

[3] *Frænkel.*—Ziemssen's Cyclopedia. Vol. IV.

[4] *Lefferts.*—*Phila. Med.* News. XLIV., No. 18.

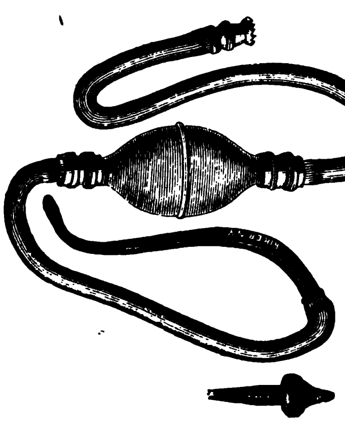

Fig. 25.

Of late years I have almost entirely discarded th douche, not because I fear developing an inflammatio of the middle ear, but I have learned that the sam result, viz., thorough cleansing of the passages, can b be attained by mean wholly free from dan ger, more simple in a plication, and less di agreeable to the patien As a substitute, I re ommend a syringe wi a nozzle closely adapt to the size of the no tril, and perforated a number of small hole the water being pr pelled by means of rubber hand-ball. Th piece attached to the hard-ball (as represented in th woodcut) is intended for introduction behind the so palate, the smaller for the anterior nares through th nostril. Another advantage this has over the douche i that the patient can regulate the degree of force and th quantity of water thrown into the nose. But in th majority of cases I find even this cleansing quite un necessary so long as the patient can attend regularly a my office or clinic for treatment. I find that for hom treatment, merely snuffing up warm water, softened b the addition of a small quantity of borax, or common salt, by means of the hand, into one nostril and then the other, the patient forcibly blowing it out, will effectually cleanse the nose for comfort and breathing purposes. A more thorough cleansing by means of sprays, I carry out in my office treatment.

The water used for this purpose should always be warm, from 90° to 110°, and may be made more effective by the addition of any one of the following solutions: borax, grs. x. to aquæ ℥i.; boracic acid, grs. x. to ℥i.; a small quantity of aqua laurocerasi will relieve pain and soreness if much exist.

Carbolic acid, gtt. v. to ℥i. is an excellent antiseptic if there is dryness and a fœtid odor. Listerine acts well in similar cases, besides which, it imparts a sensation of coolness and clearness to the passages which is very grateful to the patients. It serves as a desirable substitute for carbolic acid, the odor of which is disagreeable and even offensive to many patients.

Several of the above agents may be combined, thus forming a very useful mixture; that known as Dobell's solution, composed of the following, is largely used:

℞

Acid. carbolici. liq.,	gtt. xl.
Boracis,	
Sodii. carbonatis,	aa. ʒii.
Glycerinæ,	ʒvii.
Aquæ,	℥viii.

Ft. Mist.

In applying a spray to the nares for cleansing purposes, it should be thrown up each nostril alternately, the patient directed to incline his head slightly forward, by which the solution will be forced to go around the vomer, and then forward and downward and out through the opposite nostril, and by throwing the head backward, it will cleanse thoroughly the vault of the pharynx, the Eustachian orifices and posterior surface of the soft palate.

The mineral astringents in solutions which are so beneficial, and I may add so necessary in the treatment of these cases, I prefer to apply by means of the cotton holder or post-nasal brush ; in my experience, a general or diffuse application in the form of spray, for instance, through the anterior nares, is very liable to cause severe pain extending to the frontal sinuses, and all the symptoms of acute coryza may be brought about, lasting from a few hours to several days; I have known this to occur from very weak solutions, especially of the zinc and ferric salts.

The post-nasal region is more tolerant of diffuse applications of a strong character than the anterior nares.

I then ascertain the extent, if any, of the stenosis from hypertrophy of the mucous membrane. For some years past I have practiced dilatation by flexible metallic sounds. Elastic bougies are useless. The metallic sound acts beneficially by its non-yielding and resisting properties, promoting thereby absorption of redundant tissue. My experience has taught me that persistently persevering in this plan of treatment is as rational and as successful, upon the whole, as in similar troubles of the œsophagus, the urethra, the rectum, the vagina, and the lachrymal duct. [1] Malgaigne, speaking of the nose, says, "Here, especially, the conformation of the parts renders dilatation useful." My practice is to introduce through the lower meatus, on each side if necessary, a sound slightly curved at the end and olive pointed, carrying it through to the soft palate and retaining it in that position for several minutes. The pain at first is, in some cases, intense, but no greater than that caused, in sensitive persons, upon the first introduction of a sound into the bladder. This hyperæsthesia passes off after a few days, and the patient no longer dreads the operation. I begin with an instrument scarcely larger in caliber than an ordinary pocket probe, and eventually succeed in passing one equal in size to a number six, or eight, urethral sound. To accomplish this, weeks of persevering treatment may be required and the cure will depend, in a measure, upon the frequency with which the patient submits to treatment. For the first week, a daily introduction is advisable, after which, three times a week, and then, twice a week; the number depending upon the progress which is being made in overcoming the stenosis. I always introduce the sound, should it be necessary, before and after making use of the spray for cleansing purposes. I then introduce the cotton holder, upon which is the alterative, or astringent, solution applicable to the particular case, or make use of insufflations. There are few agents in the materia medica, for which an astringent, caustic, antiseptic, or alterative effect is claimed, that have not been tried in chronic rhinitis; and surgically we have snares, forceps, scissors, and the galvano-cautery for the radical cure of an hypertrophied condition of the mucous membrane, by its removal or destruction.

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[1] *Malgaigne.*—Operative Surgery, page 323.

I have found the following agents useful as astringents or alteratives applied locally upon cotton wrapped around the end of the holder.

Zinci Chloridi, -	grs. v. to x.	to	℥i.
Zinci Sulphatis, - -	grs. v. to xx.	to	℥i.
Zinci Iodidi, - -	grs. x. to xx.	—	℥i.
Ferri Sulphatis, - -	grs. xv. to xxx.	—	℥i.
Ferri et Ammon. Sulph.,	grs. v. to xx.	—	℥i.
Ferri Per-Chlor., -	grs. x. to ʒi.	—	℥i.
Plumbi Iodidi, - -	grs. x. to ʒi.	—	℥i.
Plumbi Acetatis, -	grs. x. to ʒi.	—	℥i.
Cupri Sulphatis, - -	grs. x. to ʒi.	—	℥i.
Ex. Pinus Canadensis Fluid, (Kennedy's.)			
Acid Carbolici, -	grs. x. to xxx	to	℥i.

℞.

Iodini, - - - - - -	grs. iii.
Potass. Iodidi, - - - - -	grs. vi.
Aquæ, - - - - - - -	℥i.

M.

In cases in which solutions cannot be tolerated, or in connection or alternating with the above treatment excellent results may be obtained from medicated powders. An agent as a vehicle for holding them should be selected, of non-irritating character, light of weight, capable of fine trituration, and not liable to absorb moisture too freely from the atmosphere. We have two excellent agents in Amylum and Lycopodium. I prefer the former on account of its tasteless quality.

The drug should not merely be mixed with the amylum, but thoroughly triturated for several hours. I have found the following combinations very useful:

Zinci Oxid., - -	1	part to	6	of Amylum.
Bismuthi-Sub-Nitratis,	1	"	2	"
Gallic Acid, - -	1	"	4	"
Calomel, - -	1	"	4	"
Alum. Exsiccat, - -	1	"	6	"

Acid. Tannic, - - 1 part to 4 of Amylum.
Pulv. Sanguinariæ, - 1 " 10 "
Sodæ Boratis, - 1 " 8 "
Iodoform, pure, (finely triturated.)

Dr. Bosworth recommends galanga in the form of powder as a stimulant in the atrophic form. Dr. Beverley Robinson claims excellent results from Acid Salicylic in cases in which the exhaled breath is fœtid.

For localized hypertrophy, for instance over the anterior surface of the middle or inferior turbinated bones, more active remedies may be resorted to, such as London or Vienna Paste, Chromic Acid, Glacial Acetic Acid, Chlor. Zinc (crys.) or Nitric Acid. They should be applied carefully on the point of a glass rod, or a small pledget of cotton on the holder.

I rarely employ them ; they inflict pain, are tedious in bringing about results, and agglutination of the tissues may take place.

This accident, unless careful measures are taken to prevent it, is very liable to occur after the application of strong caustics, especially chromic acid ; exuberant granulations may form on the septum and turbinated bones; should they come into contact from the opposing sides firm adhesions will take place, which in course of time will become converted into a strong band of cicatricial tissue which will greatly lessen the caliber of the passage, rendering the condition quite as bad, if not worse, than before the treatment for the destruction of the hypertrophic membrane. To prevent this accident, which has never occurred in my own practice, daily, during the process of healing, I introduce sounds, or the probe, for the purpose of separating the granulations, *after which,* I insert a large pledget of cotton, upon which is a small quantity of vaseline, into the nares: this will render contact of the healing surfaces impossible.

The following case illustrates this condition, and the good results following a slight operation for its relief.

Master ——, aged 16, was brought to me to receive treatment for nasal catarrh. He complained chiefly of inability to breathe through his right nostril, and dropping of mucus from above and behind the palate. He stated that chromic acid had been applied to the right side for the purpose of destroying redundant tissue, but since its application breathing through that side had been rendered almost impossible.

An examination revealed a band of cicatricial tissue, stretching from the septum to the anterior surface of the middle turbinated bone; the orifice of the inferior meatus was almost entirely occluded, but I found, by forcing my probe under it, that the meatus beyond was quite free to the pharynx, the band extended posteriorly about one-third of an inch. I introduced a small, curved, probe pointed bistoury above, and behind it, and then cut outward dividing the band.

A pledget of cotton was inserted between the lips of the incision and renewed once in twenty-four hours for a week; perfect respiration through that side of the nose was re-established.

Local treatment in those of gouty or rheumatic dyscrasia will avail nothing. It will be necessary to insist upon your patient, for a while at least, abstaining from wine, living upon a more simple diet and less in quantity than usual, at the same time taking more active exercise in the open air.

In the way of treatment, I order from one to two drachms of Carlsbad Sprudel salt in a glass of hot water, before breakfast two or three times a week. If there is much bronchial and laryngeal irritation, I direct the following:

℞.	Antimonii et Potass. Tartrat. -	gr. i.
	Potass. Bicarbonatis - - -	ʒ iss.
	Syr. Limonis - - - - -	℥ i.
	Aquæ Destill. ad - - - -	℥ vi.
	Ft. sol.	

Sig. Tablespoonful every 3 or 4 hours.

Locally, sprays of boracic acid or carbol. acid or sod. bicarbon.

THE SURGICAL TREATMENT OF HYPERTROPHIED MUCOUS MEMBRANE.—In excessive hypertrophy of the mucous membrane covering the turbinated bones, especially the middle and inferior, closing the meati, and thus interfering with nasal respiration; when presenting in the rhinoscope a baggy œdematous condition, somewhat like a gelatinous polypus; and upon inspection of the anterior nares frequently presenting the same appearance; several methods for the radical cure are practiced.

FOR THE REMOVAL OF THE SUPERFLUOUS TISSUE.—This operation is not new. [1] Nélaton performed it over thirty years ago. He used the scissors, and necessarily inflicted intense suffering upon the patient. His method at least had the merit of celerity and dispatch, which cannot be claimed for operations of more recent introduction. [2] Gross has treated these cases by tearing away the redundant tissue, and in some cases the middle turbinated bone. [3]Beverley Robinson urges caution in its adoption, as several cases in which he operated were followed by pain and swelling of the face and abundant discharges from the nasal fossæ. Robinson subsequently devised a pair of forceps with grooved and serrated edges, which he has used with satisfactory results. The pain during the operation, and the inflammation which is liable to follow, are serious objections to this method. The operation most in vogue at present is that of [1]Dr. Jarvis, of New York, concerning which he has written several admirable papers. His instruments consist of a "wire snare-écraseur;" a combined tongue depressor and rhinoscopic mirror; and two steel clips for retaining cord tape around the palate. The écraseur consists of two metal canulæ; the large one is six inches in length and flexible; the smaller, about four inches long, slides freely upon that part of the main nearest the operator. The surface of the main canula, capped by the secondary one, is threaded for the movement on its surface of a milled nut. In using the écraseur he passes the two ends of the wire through the main canula, entering them at the distal extremity, and twists them around the retention pins. A loop is formed, the size of which depends, of course, upon that of the growth. This loop should be flattened against the orifice of the canula at the two points of exit of the wires, so as to form a point of resistance for its fixation when traction is made. It can now be

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[1] *Nélaton.*—Clinical Lectures, trans. by Atlee.

[2] *Gross.*—Quoted by Robinson, "Nasal Catarrh."

[3] *Robinson, B.*—A Practical Treatise on Nasal Catarrh, N. Y., 1881.

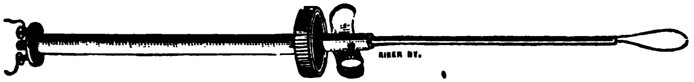

FIG. 26.

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[1] *Jarvis.*—Hypertrophic nasal catarrh. Trans. Am. Laryngol Ass., 1880.

placed in any desired position, and firmly held there by making a few turns of the nut. An elastic ring is thus formed, not to be permanently removed from its original position. On account of its elasticity it can be made to accommodate to the narrowest and most tortuous passages. Giving the wire loop a twist toward the side of the nose occupied by the growth, it is fixed by a turn of the nut and passed into the nostril. Holding the rhinoscopic mirror in one hand, the position of the wire loop in the posterior nares is carefully watched, while it is suddenly advanced with the other until it is seen to encircle the growth. On drawing the wire home, the tissue is cleanly divided, and, if not too large to pass through the nares, it will generally be drawn out clinging to the snare. Traction should be made very slowly, stopping at short intervals in order to cause the slightest amount of hæmorrhage. The hæmorrhage is trifling, provided slow traction is made.''

The instrument of Jarvis, and the operation described above in his own words, answer admirably, except in regard to the time which he devotes to severing the superfluous tissue. In his own published cases, as well as those of others, the time consumed varies from thirty minutes to four hours. The distress and annoyance occasioned by the presence of an instrument in the nose, and the enforced quiet in a constrained position during this long interval must be very difficult for the patient to endure, and a method which will accomplish the same results without danger, even though it entails greater suffering for a few seconds, or, at the most, minutes, surely is advantageous from a purely surgical standpoint.

An impression prevails very generally, that the inner nose is a highly vascular organ, and that operations requiring the use of cutting, tearing, or twisting instruments, will necessarily be followed by profuse, if not alarming, and, possibly, serious hæmorrhage. In the large majority of operations upon the interior of the nasal cavity, the hæmorrhage will cease spontaneously, and plugging by means of the tampon, or the application of astringents, will not be called for. I have frequently used the bistoury, the forceps and snare, as well as multiple bladed cutting knives; burrs with the surgical or dental engine; and with the exception of two cases of angioma, I have never encountered troublesome hæmorrhage.

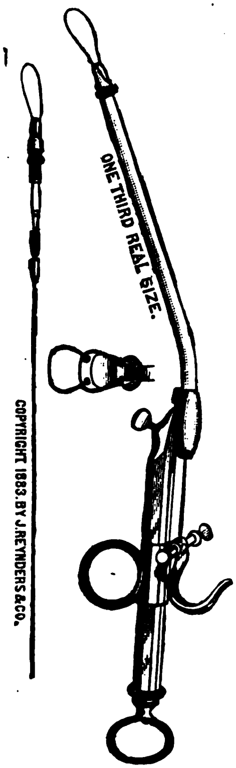

Fig. 27.

This digression I have thought proper to make in order to explain my decided preference for operations in which celerity forms part of the method. I have frequently performed the operation. In those cases where the membrane presents the appearance which I have previously described, I consider an operation very necessary. But my method of performing it is, I think, more simple than that of Dr. Jarvis; it entails quite as little suffering upon the patient, and has the advantage of celerity. I use the polypus snare of Schroetter, which is the same in principle as the Jarvis snare, with the exception of the nut and screw. It consists of a movable metal canula which is fastened to the handle at the center of the instrument by means of a small thumb screw; through this canula there passes a strong stiff wire, on the distal end of which is an eyelet for the reception of the ends of the wire loop. This strong wire is continued through the canula and fastened to a finger piece which is made to slide over the handle. The two ends of the wire to be used for the snare are passed through the small eyelets at the end of the canula and secured within the canula to the strong wire, thus making a continuous piece of movable wire from the protruding loop at the end of the canula to the finger-piece on the handle. I succeed, without difficulty, in looping the tissue, if in the posterior nares, by passing the wire along the floor of the nares directed toward the septum, then upon its reaching the pharynx, directing it outward, and slowly, but carefully, trying to encircle the mass within the loop. Of course the sense of touch and one's knowledge of the parts will be the principal guides in giving the direction to the loop. The rhinoscope enables me to see whether or not the mass is properly encircled before tightening the wire by drawing the slide toward me. Having encircled it, the wire, without further delay, is made to sever it. There is no danger to be feared from hæmorrhage, and the slight bleeding that usually follows will cease spontaneously. The same procedure is carried out in snaring the anterior hypertrophies. I think the indiscriminate performing of these operations may lead to subsequent complications, such as caries of the turbinated bones, loss of smell, and a simple rhinitis may be converted into an obstinate ozæna. Consequently they should be performed only as a *dernier ressort*, after other methods have been tried and have failed. Although I can recall no such cases, we have [1]Thudichum as authority for asserting that loss of smell follows the removal of polypi by forceps; and the injury to the parts from the snare, or écraseur, will certainly not be less in inexperienced hands, than that caused by the careful use of the forceps in the removal of polypi or tumors.

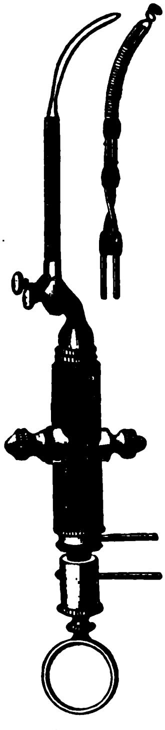

FIG. 28.

DESTRUCTION OF TISSUE BY THE GALVANO-CAUTERY.—This agent has been extensively employed for the radical cure of nasal hypertrophies. Especially is it applicable in those cases of almost complete stenosis, in which it is desirable to destroy the redundant tissue throughout the entire length of the anterior and under surface of the inferior turbinated bone, and the anterior surface of the middle turbinated bone. When cautiously used it is devoid of danger and attended with very little pain. I employ Piffard's battery and Voltolini's handle, with electrodes of my own device. The current is let on, or broken, by making very slight pressure with the thumb upon the ring through which it passes at the extremity of the handle. I make use of a broad flat knife, which I devised for the purpose. I introduce this knife through the inferior meatus to the pharynx: the current is then let on, and the knife pressed rather firmly against the membrane. A second, or two at the most, is sufficient for keeping it in the passage, as the destruction of tissue is instantaneous. Sloughing follows, and during the process of healing, metallic sounds, of as large caliber as the passage will admit, should be introduced daily, until cicatrization has taken place. Otherwise stricture of the passage may follow from membranous adhesions, but if the sounds are regularly introduced, this accident may be guarded against. When practicable, the rhinoscope should be employed before the current is let on, to ascertain that the knife is not in contact with the Eustachian orifices. For destroying anterior hypertrophies I employ a stub, consisting of several turns of platinum wire. Serious accidents may follow the careless, or incautious, use of this destructive agent. According to [1]Cohen, we may have extensive sloughing of the nasal tract; inflammation of the nasal duct and the conjunctival mucous membrane; as well as facial erysipelas involving the cranial tissues. [2]Daly, of Pittsburg, reports cases of otitis media from the accidental burning of the rim of the Eustachian orifice. [3]Shurley had permanent agglutination and obstruction of the nasal passage from accidentally cauterizing the mucous membrane covering the septum, while destroying exuberant mucous membrane covering the turbinated bone; and in the practice of [4]Michel, of Cologne-on-the-Rhine, cases of otitis media purulenta have occurred from its use. With a well dilated nostril; proper insulation of the knife; a battery in thorough working order—care being taken that the platinum is not too thick to become raised to white heat instantly—and then with a steady hand and not keeping the connection on for more than a second or two at a time; accidents, as above described, need not be feared.

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[1] *Thudichum.*—On Polypi, etc., and their successful treatment by galvano-cautery method. International Med. Con., Lond., 1880.

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[1] *Cohen* (*J. S.*)—Galv. caut. method, etc. International Med. Cong. Lond., 1880.

[2] *Daly.*—Am. Med. Ass'n., Phila., 1880. xxxi., 653.

[3] *Shurley.*—St. Louis Med. & S. Jour., 1880. Vol. xxxviii.

[4] *Michel.*—Für Behandlung der Krankheiten der Mundrachenhöhlen, etc. Leipz., 1880.

Case of Hypertrophy of Mucous Membrane covering Inferior Turbinated Bone, left side Posterior. Removal by Snare.

Mr. D., aged 38, in good health, occupation, merchant, consulted me for nasal catarrh of five years duration. He complained of inability to breathe through his nose and the usual symptoms of chronic rhinitis were present. An examination revealed stenosis of both sides, but in the left posterior naris, the mucous membrane covering the inferior turbinate was greatly hypertrophied, nodulated like a papilloma and filled the entire space. I introduced the snare, carried the wire through the inferior meatus of the left side, keeping close to the septum and by careful manipulation caused it to encircle the mass; the wire was slowly tightened around it, slight traction with a gentle twisting or rotatory movement was made and the mass came away. Slight bleeding followed which ceased spontaneously. The operation was performed in about three minutes.

The right nostril was subsequently dilated by metallic sounds aided by applications of iodine.

Case II.—Anterior Hypertrophy of the Middle Turbinates.

Miss M., aged 36, occupation school teacher, consulted me for chronic catarrh interfering with nasal respiration. I found the mucous membrane covering the anterior surface of the left middle turbinated bone, hypertrophied, and œdematous, resembling very much a gelatinous polypus—the right side was similarly affected but not to such an extent.

I removed the redundant tissue from the left side without difficulty with the snare, no bleeding—operation performed within a few minutes.

The galvano-cautery stub was employed to destroy the tissue on the right side. The patient was permanently relieved by the two operations.

CHAPTER VII.

CHRONIC RHINITIS WITH ULCERATION, OR OZÆNA.

Ozæna is not a distinct or separate form of disease, but is merely a later stage of chronic rhinitis, most frequently the atrophic form, characterized by ulceration of the mucous membrane, with or without necrosis of the bones and cartilages, and accompanied by a fœtid discharge of very offensive odor. The odor is peculiar, and is of a pronounced and sickly, nauseating character. It is due wholly to the decomposed crusts of hardened secretion, which accumulate and adhere closely to the turbinated bones; or to the presence of caries of the bones; but not to a perverted secretion. The erosions of simple, ordinary chronic rhinitis, which I have described as occurring occasionally upon the septum and turbinated bones, are very liable, if neglected, to degenerate into true ulceration. Especially is this the case if the subject is strumous or has a syphilitic taint. In fact, erosion of the mucous membrane is merely ulceration to a superficial degree. We are more likely to find it in those cases of chronic rhinitis that follow the exanthemata, such as scarlet fever, small-pox, typhoid fever, measles, etc. Scrofula and syphilis are the most common causes of ozæna. In the scrofulous variety, the pituitary membrane becomes hypertrophied and almost fungous in its character. The acrid secretions of a muco-purulent character, having no free exit, from the narrowing or occlusion of the meati, caused by the hypertrophied tissues, produce erosions, and finally ulceration of the mucous membrane, which may extend to the bone, which in scrofula rarely becomes primarily affected.

On the other hand, in the syphilitic variety, the progress of the disease is more rapid; the periosteum is frequently primarily attacked, the inflammation extending to the bones, which become necrosed or carious; and later on, the soft parts, including the mucous membrane and cartilaginous septum are destroyed through ulceration.

The cartilages of the alæ and the integument covering them become swollen and inflamed, and at the orifices of the nostrils near the angle formed by the alæ ulcers appear; having the deep, cupped surfaces with the everted edges of specific ulcers. But as ozænic cases frequently do not apply for treatment until the disease has existed for quite a length of time it may be difficult to diagnosticate the cause; in doubtful cases the previous history must decide as to the proper constitutional treatment.

An herpetic variety is recognized by some writers, (Trousseau, D'Azembuja and Desaiverve); herpes or psoriasis usually exists in other portions of the body at the same time; an absence of osseous lesion is a peculiarity of this form of ozæna.

We may have also an ozæna caused by a foreign body lodged in one of the meati, which by occluding the passage, may cause the secretion to collect around it; inflammation and ulceration of the soft parts supervene, and an ozæna is in this way brought about. Or a foreign body may be lodged in one of the turbinated bones from which an obstinate ozæna may arise.

[1]Parker relates an interesting case of chronic ozæna of sixteen years' standing, caused by a quartz pebble impacted in the inferior turbinated bone. Recovery followed removal of the turbinated bone with the foreign body.

TREATMENT OF CHRONIC RHINITIS WITH ULCERATION, OR OZÆNA.—If the disease arises from a diathesis, which must, if possible, be ascertained before beginning treatment, the proper remedies should be given. If of syphilitic origin, the iodide of potassium, in small doses, and mercurials in tonic doses. I usually give the biniodide of mercury, in doses of from 1-100 to 1-50 of a grain, three times a day. If it occurs in a scrofulous subject, tonics and alteratives should be given. Maltine; cod-liver oil; iron in some form; the iodide of iron is my favorite, and generous diet. For removing the hard, decomposed, offensive smelling crusts of mucus which cling to the turbinated bones, their interstices, the septum, the vault of the pharynx and posterior surface of the soft palate, my plan is as follows: With a pledget of cotton on the holder, I first attempt to loosen, and dislodge, all that I can possibly reach. I then throw up a spray of warm water softened by powdered borax, or soda, or carbolic acid; this I apply for a few minutes, first up one nostril, then the other, directing the patient to hold his head back, in order that the spray may reach the posterior surface of the soft palate, the vault of the pharynx, and other portions of the post nasal region: after each application of the spray, directing the patient to forcibly blow out whatever may remain, until I am satisfied, by examination, that the passages are clear. This method, although tedious, is in many cases, effectual. I then proceed with the local applications. Of all the agents that I have employed, iodoform, pure and very finely powdered, thrown well into the nares, by means of the straight or nasal insufflator with compressed air, has given most satisfactory results. The same agent may be used by the patient, if an objection should be raised to its disagreeable odor during the day, when compelled to be in the company of others, in the form of a suppository, three or four grains mixed with cocoa butter, and inserted into the nose upon retiring at night, to be retained by means of cotton wool, until morning. I frequently make use of calomel, one part to four parts of powdered starch, finely triturated, and thrown into the nose by means of the insufflator. It is soothing, favors healing when applied to ulcerated surfaces, and is very grateful to the patient. I do not claim it as a new remedy in these cases. [1]Trousseau used it largely, as a snuff, in this disease. The oxide of zinc, one part to ten parts of powdered starch, may be used in the same way; so may powdered borax, about the same strength, or one part to eight of starch. I also direct the patient, before retiring at night, and after cleansing the nose as thoroughly as possible by means of the nasal syringe, or by the the douche, with warm water; to introduce on a camel's hair brush, or on his finger, an ointment of vaseline, or the unguent petroleoli. This is for the purpose of preventing the secretions hardening and adhering to the surfaces of the turbinated bones.

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[1] *Parker.*—Trans. S. C. Charleston Med. Ass'n, 1881. Vol. xxxi., 109.

[2]W. P. Thornton reports five cases of simple ozæna,

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[1] *Trousseau.*—Clin. Med. Vol. iii., p. 67. Ozæna.

[2] *Thornton (W. P.)*—Brit. Med. Jour., 1880. I., 475.

and one case of syphilitic ozæna cured by the following formula:

℞. Sodæ Carbonatis,	
" Biboratis, ...	aa ʒ ii
Liq. Sodæ Chlorinatis, . .	ʒ i
Glycerinæ, ...	℥ i
Aquæ ad	℥ viii

It is applied cold, by means of a hand ball spray apparatus. In syphilitic ozæna, he does not give the iodide of potassium, as he believes it causes a discharge from the nose, but relies upon small doses of mercury. [1]Lennox Brown has had excellent results from the following.

℞. Boracis,	
Acid. Salicylatis, ...	aa ʒ iii
Glycerinæ	℥ iiss
Aquæ	℥ iii

Ft. Sol.

Sig. ʒ ii to Aquæ. ℥ viii

Use as a spray or gargle.

He found thymol, and other antiseptics, too irritating, and has abandoned their use. [2]Woakes recommends packing the nasal cavities with cotton wool, first charging it with the drug he wishes to use in the particular case. He introduces the cotton into each nostril along the floor of the fossa, first tying it with thin thread, which projects beyond the nostrils, to prevent its falling into the pharynx, or larynx. In this way he makes local applications to the vault of the pharynx, or the fossa of Rosenmüller, or to the orifices of the Eustachian tubes.

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[1] *Brown* (*L.*)—Brit. Med. Jour. Lond., 1879. II., 691.

[2] *Woakes.*—Lond. Lancet, June 5, 1880.

But as I have already stated, so long as the trouble depends upon necrosed bone, local treatment will be of no avail. It is not always possible to ascertain its presence by examination through the anterior nares, and even probing may not detect it, as the necrosis may be confined to the posterior portions of the bones, and the fistulæ open in that direction. The escape of pus from them may be seen with the aid of the rhinoscope, and probes bent to the proper angle and introduced behind the palate, may be employed to ascertain the extent of the necrosis. For removing bone I use a pair of strong cutting forceps such as are represented in Figs. 29, 30 and 31, and my method is to seize with

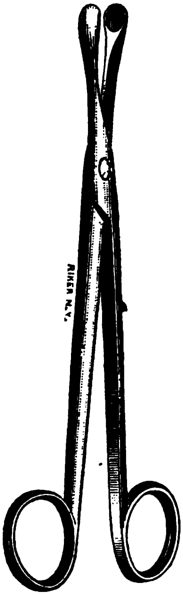

Fig. 29.

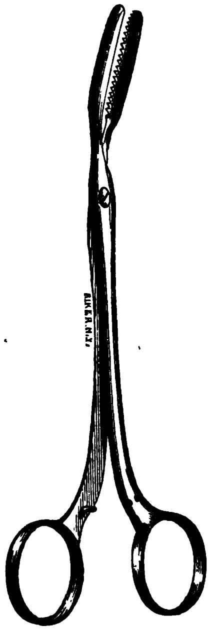

Fig. 30.

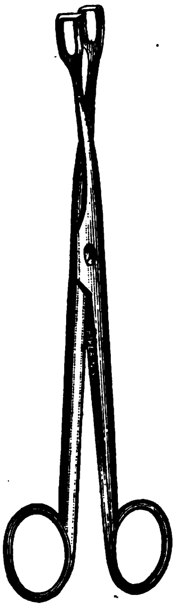

Fig. 31.

them and remove the denuded bone wherever I can reach it, and not to desist until I reach healthy bone. With the removal of the diseased portions a cure will speedily follow. [1]Rouge of Lausanne, has proposed a novel operation for the removal of necrosed bone. He cuts through the mucous membrane of the mouth, divides the cartilages at their attachment to the upper jaw, and then lifts the upper lip and nostrils together. A very good view is thus obtained of the nasal fossæ. The operation is certainly thorough, but as he has had several deaths to follow it, from pyæmia and meningitis, I think it should only be resorted to in very extreme cases.

The surgical or dental engine with the multiple revolving knives, or burrs, may be employed successfully in these operations. Especially in those cases in which necrosis involves all or the greater portion of the turbinated bones and the vomer. [2]Dr. Goodwillie has employed it in a number of cases, and it is greatly to be preferred to the method of Rouge, as the danger of the subsequent development of the complications which caused the death of his patients is greatly lessened.

Case of Ozæna.—Extensive Ulceration, Necrosis of Turbinated Bones and Vomer and Destruction of the greater portion of the Cartilaginous Septum.

Mr. B., of Louisiana, aged forty-eight, large, well developed, and apparently in excellent health, came to New York in the summer of 1876 for the purpose of placing himself under my treatment. He gave a history of primary syphilis, contracted nearly thirty years before, and stated that to the best of his knowledge it had not been followed by either secondary or tertiary symptoms. His present trouble had begun as an ordinary cold in the head about five years ago, and the offensive discharge and odor about three years later. He had used douches, syringing, insufflations, and had been subjected to thorough and repeated courses of iodide of potassium and mercurials. Finally, he was sent to the famous Hot Springs of Arkansas for the benefit of its baths, and whilst there received further mercurial treatment, but not improving in health, came north to consult me. As soon as he entered my consulting room the nauseating and disgusting odor was at once observed, the most pronounced I have ever encountered. An examination revealed complete destruction of the body of the cartilaginous septum, leaving only a small portion of the anterior and superior border. Its connection with the vomer had disappeared. The nose consequently was sunken, but owing to the preservation of the tip the deformity usual in such cases was not so marked. After removing the decomposed crusts and thoroughly cleansing the nares with a strong spray of carbolic acid, I examined for necrosed bone. I found the turbinated bones on both sides carious, as well as the vomer to the extent of one-half of its anterior portion. I operated at once with my cutting forceps, and succeeded in removing all the turbinated bones and the portion of the vomer referred to. The after treatment consisted in the thorough use of carbolic acid spray for cleansing, and touching daily the exuberant granulations with sulphate of copper, after which insufflations of iodoform. In ten days perfect healing had taken place. There was no odor, and the amount of secretion very slight. I have frequently heard from this gentleman and have seen him several times since he passed from my professional care. He has had no trouble since, and he assures me his cure is complete.

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[1] *Rouge.*—Watson's Diseases of the Nose, p. 686.

[2] *Goodwillie.*—Extirpation of the bones of the nose, etc., by the use of the surgical engine. 1879.

Case 2.—Necrosis of Turbinated Bones and Vomer with Exuberant Granulations.

J. F——, an enlisted man in the United States army, stationed at a post in the extreme northern portion of Montana, was sent me in the spring of 1880 by the post surgeon for treatment. He was admitted into the Metropolitan Throat Hospital in May, 1880. The surgeon stated in a letter that he had tried specific treatment thoroughly, thinking the disease might be of syphilitic origin, but that under it the disease seemed to extend more rapidly. The patient stated that during the preceding winter he had been much exposed, in the line of his duty, to extreme cold, the thermometer ranging from ten to forty degrees below zero. He traced his trouble to a severe cold contracted at that time. An examination showed the nares filled with unusually large exuberant granulations over the turbinated bones, unlike anything I had ever seen, and there being no history of syphilis, and the fact that the specific treatment had aggravated the trouble, made me suspect that the disease might be that *rara avis*, lupus of the interior of the nose. A further exploration disclosed extensive osseous lesions. I removed with my forceps the turbinated bones and a large portion of the vomer, and had the nostrils thoroughly washed out several times a day by means of a strong spray of carbolic acid. At night I used a large pledget of cotton upon which was put a small quantity of iodoform. Internally he was given maltine and nourishing diet. He remained under treatment six weeks; there being no odor and scarcely any discharge from the nose he left the hospital cured.

Case 3.—Chronic Rhinitis with hypertrophy of the mucous membrane followed by the atrophic stage and later by Ozœna. Cure.

Miss B. of Iowa, aged 14, was brought to me for treatment in the early part of the winter of 1880 with the statement that she had suffered severely from catarrh for several years.

Her general health appeared excellent, she complained of inability to breathe through her nose, there was a profuse discharge of a thin, watery fluid, and she suffered from pain which at times she referred to the frontal sinuses.

An examination showed extreme hyperæmia with thickening of the mucous membrane covering the inferior and middle turbinates, anteriorly and posteriorly. The treatment consisted in dilatation by metallic sounds, and topical applications of mild astringents. In the spring of 1881 she left the city for the west, relieved but not cured, respiration had greatly improved and the discharge lessened; the following autumn she returned and was again placed under my care. The mucous membrane was still very hyperæmic but the swollen hypertrophied condition had entirely disappeared and the passages were abnormally large in caliber, the discharge had changed from a thin watery character to a dry, thick, tenacious secretion, with hard dry crusts; numerous minute points of erosion were observed on the turbinated bones and the posterior surface of the soft palate.

The treatment consisted in thoroughly cleansing the passages with sprays of carbolic acid, or boracic acid; insufflations of calomel or borax and powdered starch, and at night she was instructed to introduce vaseline by means of the finger or a camel's hair brush, to prevent the crusts hardening and adhering to the membrane.

During the brief period she was under treatment she improved considerably, but she was compelled to leave New York and I did not see her again until nearly a year had elapsed; in the meantime, she had consulted no one and had neglected to persevere in carrying out my suggestions as to treatment. The erosions upon the turbinated bones had become ulcers, the discharge very offensive and its odor characteristic of ozæna, huge masses of hardened inspissated mucus, having the outlines of the turbinated bones to which they were firmly attached, were dislodged with difficulty.

Careful explorations with the probe failed to detect osseous lesion.

The progress of this case toward recovery was very tedious, the immense crusts or masses were daily dislodged by means of cotton on the holder, followed by thorough and long-continued cleansing of the passages with disinfectant sprays of carbolic acid or borax, insufflations of iodoform, pure, alternating with calomel and occasionally stimulating the ulcerated surfaces with cupri sulph. Her hygienic surroundings were all that could be desired, she was ordered also maltine and pil. ferri iodid., although there seemed to be no special indication for either.

Under this treatment, healing of the ulcers was slowly brought about, the crusts ceased to form, the discharge gradually lessened, and when I last saw her, about six months after she had passed from my care, there had been no return of the disease.

CHAPTER VIII.

DEFLECTION OF THE SEPTUM.—ACUTE IDIOPATHIC PERICHONDRITIS OF THE SEPTUM.—PERFORATION OF THE SEPTUM.

DEFLECTION OF THE SEPTUM.—One of the most common causes of nasal stenosis is deflection of the septum. It may be either congenital, or acquired, and may be either to the right or to the left side. It is claimed by some, that in a given number of cases, the deflection will be found more frequently toward the right side. Others again, claim that deflection toward the left is more frequently met with. So far as my own experience goes, I have found no marked preponderance in favor of either side ; that is, in a given number of cases there will be found about an equal number having the deflection on either side. I think that the deflection is more frequently due to traumatic origin, than to congenital asymmetry of the parts. In my own practice, cases occurring in children under the age of puberty, are rare as compared with the number found in those of more mature age. This leads me to infer that the causes are oftener accidental, or traumatic, than congenital.

The accidental causes may arise from a blow, a fall, or a direct crushing injury. It is claimed that the practice of wiping the nose with the handkerchief, habitually in one direction, that is from right to left, or from left to right has an influence in producing the deflection. [1] M. Richét says it is caused by the habit of nurses always wiping the child's nose to the left, and that it is *always* found on the left side, never on the right. Béclard holds similar views regarding its origin, but thinks the direction of the deflection will depend upon the hand used in wiping the nose ; he says the deflection is found more frequently on the right side than on the left, because the greater number of persons are right-handed. Delavan, on the other hand, says that "deflection is very commonly met with among the lower races, especially the negro, with whom the use of the handkerchief is unknown." A dyscrasia arising from scrofula, or syphilis, can hardly be said to influence the distortion of the septum, from the fact that in many cases in which it occurs, the subjects are wholly free from any constitutional taint. The affection is, in my opinion, purely local. [2] Delavan, in an original and very admirable paper, claims that hypertrophy of the middle turbinate acts as a cause in producing the deflection. He bases his opinion upon the fact that in examining a number of crania, 140, he found a deflection of the septum in 18, and of these 18 there were 60 per cent. of hypertrophy of the middle turbinated bone on the opposite side to the deflection. In many, perhaps the greater number of those who consult us, it will be found impossible to assign a cause for the deflection. In some instances we will have a history of injury, such as a blow, a fall, and in these cases there will usually be found a dislocation of the vomer from the cartilaginous portion. A perfectly straight septum is rarely met with ;

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[1] *Richet.*—Gaz d'Hop, Paris, 1879. LII., 969.

[2] *Delavan.*—Hypertrophy of the Osseous Structure of the *Turbinated Bones.* Trans. Am. Laryngol. Ass.

but the deflection is not always of sufficient extent to give much annoyance to the patient from obstructed breathing. The deflection may be confined to the anterior nares, that is to the cartilaginous portion, and it may extend entirely across the nostril, coming almost in contact with the ala. It may present a round smooth appearance, or it may be sharp and angular. In any case, there will be a greater or less depression, or concavity, corresponding to it, upon the opposite side. It may be twisted or bent upon itself, somewhat in the form of the letter S, in which case, there will be stenosis on both sides. There may also be deflection extending from near the opening of the nostril, backward and upward, including the vomer as well. Where there is a dislocation of the vomer from the septum, usually the result of a severe blow upon the side of the nose, there will be a ridge extending vertically, and it is this variety particularly that is least amenable to treatment.

Symptoms of deflection of the septum.—The subjective symptoms are those of chronic rhinitis. For instance, nasal respiration will be greatly impeded, if not wholly interfered with; hypertrophy of the mucous membrane ensues; increase of the mucous secretion, not only in the anterior nares, but from above and behind the palate, with dropping into the mouth, deafness from closure of the Eustachian orifices, or from disturbance of the intra-tympanic tension. The sense of smell is impaired, if not altogether lost, in severe cases; the alæ become shrunken, and fall in towards the septum; the contour of the nose is altered; a naso pharyngitis will be developed; and the pernicious habit of mouth-breathing be formed. *The voice* is also affected, acquiring a *decidedly nasal twang.*

Treatment.—Until a recent period, about twelve or fifteen years ago, this condition received but little attention from the hands of surgeons. When an Interne, at the Baltimore Infirmary, a quarter of a century ago, cases having fracture of the vomer and cartilaginous septum, with dislocation, producing an unsightly deformity, and interfering wholly with nasal respiration; cases which had received no treatment at the time of the accident, would occasionally present themselves at the hospital. Professor Nathan R. Smith, by means of a mallet and a small stout stick, which he placed at the side of the nose, with a sudden strong blow from the mallet, would refracture the parts. The dislocation was thus reduced, and the parts were held in place by means of splints inserted into the nose until union had taken place. Extreme cases of that variety only, received attention from surgery in those days. But of late years, numerous operations have been suggested and we are not wanting in literature upon the subject. The operations of Adams, Jarvis, Delavan, Goodwillie, Steele, Bolton, Glasgow, Mackenzie of Baltimore, Ingalls of Chicago, and others, have all met with more or less gratifying results. The main object to be aimed at in any operation for deflection of the septum should be to restore nasal respiration. [1]Adams' operation is more applicable in those cases resulting from fracture: he uses a pair of strong forceps with flat parallel blades, and where the nasal bones are depressed, he raises them by carrying the blades directly upwards; after forcibly straightening the septum he employs a retentive apparatus, consisting of a steel screw compressor, which is applied so as to support the septum, one blade being introduced into each nostril, and the screw tightened, just sufficiently to hold it in position and bring the blades in contact with the septum without making any pressure upon it. This apparatus can be worn two or three days, and nights, without removal; after which he introduces ivory plugs which the patient can remove and re-introduce at pleasure. Both nostrils are kept moderately distended, and support is given by them to the cartilaginous septum.[1] Delavan recommends the removal of the middle turbinated bone on the side of the concavity; he thinks there is no reason anatomically or surgically speaking, why the turbinated bones should not be removed, claiming that no evil results would follow. The turbinated bones certainly have functions to perform in the economy, one of which is to raise the temperature of the air to that of the body before it reaches the lungs. An impairment, if not total loss of the sense of smell, certainly follows their removal. Besides which, an annoying pharyngitis will most surely be developed. [2]Mackenzie, of Baltimore, removes the inferior turbinated bone upon the side of the deflection. The operation of Steele, of St. Louis, which, as shown by Mackenzie, is a modification of that of Dr. Bolton, of Richmond, who described his procedure eleven years before the appearance of [3]Steele's article, is simply a resection of the cartilaginous portion by means of cutting, or punch forceps. And besides, it does not relieve the condition by restoring the physiological function of the meatus on the obstructed side, but establishes a communication between the two nostrils, the closed meatus remaining closed. A tendency to scabbing around the edges of the perforation will remain a constant annoyance to the patient. The operation of Blandin and of Goodwillie by means of the punch is open to the same objections. Ingals' operation consists in removing, by means of the knife or scissors, the projecting cartilage, care being taken to preserve the mucous membrane covering the cartilage removed. Jarvis' operation consists in removing the hypertrophied mucous membrane and excising portions of the cartilaginous septum by means of his snare écraseur, transfixion needles, and scissors, which have been referred to in a former chapter.

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[1] *Adams.*—Watsons Diseases of the Nose. Page 437.

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[1] *Delavan.*—Op. cit.

[2] *Mackenzie* (*J.N.*)—Deflection of the Nasal Septum and its treatment. Reprint from Trans. Med. Soc., Va., 1883.

[3] *Steele.*—Lateral deflection of the Nasal Septum. St. Louis Cour. Med., *1879, I.*, 485, 492.

M. [illegible] employs the forceps of Liston in his operations; and Dr. Post of New York separates the side of the nose from the cheek and turns it over, in order to get access to the obstruction, and then removes the protruding part of the septum and some of the superfluous superior maxillary bone. The nose is then turned back and secured and traces of the incision would not be sufficient to attract the attention of casual observers. This operation will scarcely find favor, in view of its severity, the danger of subsequent inflammatory action, and the unsightly scar which will

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Blandin.—Restauration des fosses nasales. Bull. de l'Acad. de Méd., [illegible], Vol. IV, p. 336.

Ingals.—Deflection of the Septum Narium. Trans. Am. Laryngol. Ass., 1882.

Jarvis.—Deviated Septum in Nasal Catarrh. Trans. Am. Laryngol. Ass., 1882.

Post.—Proc. N. Y. Path. Soc. N. Y. Med. Journ., April, [illegible].

always be objectionable, especially if the patients are of the female sex.

Some years ago in cases in which the deflection was anterior, and confined to the cartilaginous portion only, I operated by using a small knife, curved and probe-pointed, which I passed above and behind the deflection, and carried through the projecting cartilage by cutting toward the orifices of the nostril. In other cases I used the punch of Blandin, as modified by Goodwillie; but the results were by no means gratifying. Several years ago I began to employ the dental engine with cutting burrs, and multiple revolving knives.* I have operated in all, in about twenty-five cases, and the results have been, almost without exception, most satisfactory.

The surgical or dental engine consists of a fly-wheel, set in motion by the foot, a driving-pulley, and a communicating cord. On the top of the upright movable shaft the pulley is connected to a flexible wire cable inclosed in a flexible sheath. This cable is connected to the hand-piece, in which can be inserted any revolving instruments. The flexibility of the wire cable allows the instrument in the hand-piece to be freely used at any angle. The hand piece, held as you hold a pen, is under perfect control. The instruments are securely fastened in the hand-piece by means of a spring-catch.

The *single revolving knife* is circular and sharpened on the edge, and has a protecting sheath to cover up the part of the knife left exposed.

Under a velocity of two or three thousand revolutions per minute, the single revolving knife, in cutting soft sensitive parts, gives little or no pain.

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* The profession is indebted to Dr. Goodwillie, of New York, for this valuable and extremely useful apparatus. He was the first to employ it in surgical operations.

The *multiple revolving knives* are arranged around the end of a shaft in an acute angle, and *cut* as they revolve, and do not *scrape* as the dental burrs. These instruments have a protecting sheath to be used when necessary.

Saws, like the single knives, are circular, and have teeth on the edge.

The *trocars* are of different forms and sizes, and they are intended to make an opening and then to enlarge it. Fig. 32 shows one of the largest size.

FIG 32.

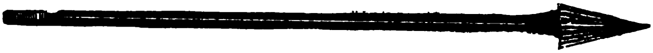
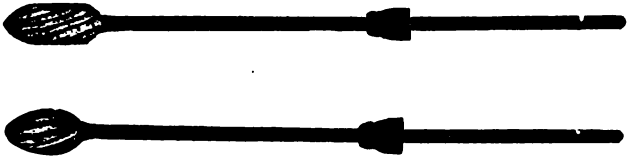


FIG. 33.



FIGS. 34 and 35.

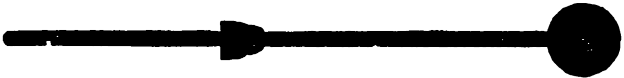


FIG. 36.

Figures 33, 34, 35 and 36 represent burrs and cutting trocars of different sizes and forms.

In operating with the cutting burr or multiple revolving knife, the patient sits upright with his head thrown well back and supported by an assistant. In my earlier operations with this instrument I employed a head rest consisting of an iron frame, to which was fastened a leather cap upon which the head rested, the cap fastened securely around the head and buttoned tightly over the forehead. The arms were fastened to the sides of the chair by leather bands or bracelets. But I now never find it necessary to resort to these appliances. The head is supported firmly by an assistant, and the patient is made to appreciate the necessity of keeping absolutely quiet; this they never fail to do, after having explained to them the danger and risk they incur of serious injury from sudden change of position. I have never employed an anæsthetic since my first case, and the annoyance which it gave me in that instance, has deterred me from administering it in subsequent operations. The patient being placed in position as above described, an assistant is detailed to start the engine, but not until the nostril is well dilated. I then apply the burr, or knife, without the protecting sheath which I have discarded, if possible under or on the side of the prominence, and on a line with the orifice of the inferior meatus. Having it in position, I press firmly upon the obstruction, and direct my assistant to start the wheel. A little practice will enable one to judge how far he has penetrated with the instrument. It should be carried through to the pharynx, if a diagnosis of stenosis beyond the anterior obstruction has been made. This operation seems formidable, and one well calculated to inflict much suffering upon the patient; but I never have had an accident of any kind occur, though I can readily conceive how a very serious, if not fatal one, might take place did the operator fail to watch every movement of the burr, and be prepared to withdraw it instantly upon any intimation of sudden starting on the part of the patient. There is no hæmorrhage to any extent, no more than ordinarily follows laceration or incision of the mucous membrane. But still it is quite sufficient at times to interfere with the vision of the operator. This, and the tension or strain upon the patient from enforced quiet, and the disturbing noise in his head generally, induces me to give two sittings for an operation, allowing several days to intervene. Patients assure me that the pain is not very great, and I never have known an instance which was followed by inflammatory action to any extent; I have operated upon children as young as eight years; and upon nervous delicate, girls of fifteen and sixteen, without administering an anæsthetic.

I think, upon the whole, the results from this operation are more gratifying than those from any that has been suggested. The burrs which I use, from the rapidity with which they are made to revolve by the engine, would pierce iron, and certainly nothing that we are apt to encounter in the nose will prevent their progress through the inferior meatus, if the proper direction to them be given. No after treatment is required further than the passing of sounds through the inferior meatus for eight or ten days. The following cases are from my note book, and were operated upon either at the Metropolitan Throat Hospital or in my office.

CASES OF DEFLECTED SEPTUM.

Case 1.—J. S. Young man aged 22; occupation, street car conductor; reported for treatment at my clinic at the Metropolitan Throat Hospital in May, 1881. A large exostosis was discovered on the right side, about the size of a hazel nut, rounded in shape, springing from the vomer and extending to the cartilaginous septum; respiration through the right side wholly obstructed. A large sharp burr was used, and applied to the side and lower portion of the tumor *which proved to* be hard, dense, and eburnified. Two *sittings of from* ten to fifteen minutes each were found necessary for the entire removal of the mass. Hæmorrhage was trifling. The patient breathed without difficulty through the right side after the operation, and declared himself cured. No inflammatory action followed.

Case 2.—E. M. A young gentleman aged 20; private patient. As he insisted upon taking ether, I sent him to the Metropolitan Throat Hospital for operation. When quite a lad he had received a blow upon the right side of his nose, which produced a partial dislocation of the cartilage from the vomer. No surgical treatment was resorted to at the time of the accident. The cartilage and vomer were both deflected at their point of union considerably toward the left side, completely blocking the entrance to the inferior meatus and preventing respiration through that side. Ether was administered. I used a multiple cutting knife, which I forced between the floor of the naris and the deflected septum and vomer. After several minutes of boring, I penetrated the inferior meatus, which I found open, but much contracted. The knife was carried through to the pharynx, and but slight hæmorrhage occurred, but the restlessness of the patient from the ether increased the difficulties of the operation to such an extent that I determined never again to administer it in similar operations. For two weeks after the operation, metallic sounds of large caliber were introduced frequently, to overcome the stenosis of the inferior meatus. Patient discharged, cured.

Case 3. Mrs. V—, a lady aged about thirty; deflection of the cartilage on the right side, coming in contact with the ala, and almost entirely obstructing the passage of air through the right inferior meatus. No history of injury, but had suffered from what she called catarrh, for many years. The projecting cartilage was removed without difficulty, by means of a multiple cutting knife. Patient discharged, cured.

Case 4.—Miss H——, a young lady about twenty-six; precisely the same condition as the previous case, with the exception that the deflection was toward the left side. Same operation performed, and respiration through the inferior meatus of that side fully re-established.

Case 5.—Mr. J——, a young gentleman aged nineteen; deflection of the cartilage and the anterior portion of the vomer deflected toward the right side; no respiration through that side. The long cutting multiple knife was used and held well under the projection, along the floor of the naris, and carried through to the pharynx. The inferior turbinated bone of this side was very much enlarged, and the knife was carried through it. An excellent passage was made, which was kept patulous by the frequent passing of sounds of large caliber for two weeks after the operation. Patient discharged, cured.

Case 6.—Dr. J., a student at the New York Post-Graduate Medical School, aged about 32, consulted me for impaired nasal respiration. An examination revealed deflection of the cartilaginous portion of the septum towards the left side, occluding almost entirely the orifice of the inferior meatus. A small sound was passed under the point of deflection and beyond to the meatus, which I ascertained to be almost normal in caliber. The projection of the cartilage was completely removed by means of the cutting multiple knife in two sittings. He had an excellent passage for breathing purposes, and no inflammatory action followed the operation.

ACUTE IDIOPATHIC PERICHONDRITIS OF THE NASAL *SEPTUM.*—Acute idiopathic perichondritis of the septum occasionally occurs, but very rarely. In the early stages the patient experiences a feeling of intense pain, as if a boil were forming at a particular spot upon the septum. This slowly increases, until the nostril on one or both sides becomes entirely occluded. The pus will form and burrow between the mucous membrane and the cartilage, and the membrane will be forced downward and outward and made to project beyond the orifices of the nostrils, and thus resemble huge polypi. The external nose at the same time may be greatly swollen and œdematous; there is great elevation of temperature and increase in the rapidity of the pulse; the condition is a serious one, as meningitis or pyæmia may be developed, and should the patient recover it may be with the destruction of the cartilage, causing the nose to fall in, producing an unsightly deformity. Therefore the treatment must be prompt and decisive; exit must be given to the pus as it accumulates, by large, free incisions through the mucous membrane down to or through the cartilage. I have met with but one case in my practice; and with the exception of a case reported by Dr. Delavan[1], occurring several years after my own, I have been unable to find others on record. The following is a report of my own case:

Miss B—, a well known young actress, connected with one of our most popular theaters, consulted me early in February, 1879, for a slight sub-acute pharyngitis; she also called my attention to what she termed a boil on her nose. Upon examination, I discovered a small circumscribed hardness to the left of, and near the junction of the cartilaginous with the bony septum; internally a hyperæmic condition of the mucous membrane, especially on the left side. I directed the application of warm fomentations, and informed her that it would probably be ripe for opening within a couple of days. On the following morning, Friday, she again called at my office but no marked change had taken place. I did not see her again till Monday, when I was requested to visit her at her residence. I found the nose immensely swollen and œdematous, pitting upon pressure and of a dark, dusky color ; intense pain extending to the frontal sinus and the brow; no pus as yet, but every indication of its speedy formation.

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[1] *Delavan.*—Archives Laryngol. Vol. IV., No. 2.

On Tuesday afternoon, the swelling of the nose externally had greatly increased, both nostrils entirely occluded by the swollen septum, breathing was performed through the mouth only, temperature 105°, pulse 145 ; had been somewhat delirious during the day. Introduced my knife into the left nostril, and incised freely the septum and mucous membrane covering the turbinated bones ; the incision into the septum was followed by the escape of a large amount of thick creamy pus containing plugs of slough—no pus on the right side. The quinine and iron which she had been taking for several days was increased to grs. x. with gtt. xxv. of tinct. iron every three hours. At ten P.M. I again saw her, incisions were made on the right side. and exit given to a large amount of pus. At 2 A. M. her mother, alarmed by her heavy breathing, tendency to stupor and apparently sinking condition, sent for me in haste. I found the incisions closed : they were reopened and the retained pus allowed to escape ; champagne, beef tea, and milk were ordered to be given freely. During the remainder of the night there was no interruption to the flow of pus ; in the morning the temperature had fallen to 101°, pulse to

110. She continued to improve, but weeks elapsed before she recovered sufficient strength to resume her duties at the theater.

The abscess appears to have formed in the body of the cartilage and for some time after the subsidence of the acute symptoms I could carry my probe, by introducing it through the incision made by my knife, into the cavity or space thus hollowed out by the suppuration, to the vomer. By means of a small syringe with a long fine nozzle, I drew off daily the pus formed in this cavity, after which, I washed it out with a weak solution of carbolic acid : a compress of cotton was then introduced into the nostrils, thus aiding the closing of the cavity. No deformity or loss of symmetry of the external organ followed, but this I attribute to the fact of the cartilage at its junction with the vomer having escaped destruction.

The case of Dr. Delavan was very similar to that above reported ; the line of treatment was the same, and the termination as fortunate.

PERFORATION OF THE CARTILAGINOUS SEPTUM. Perforation of the cartilaginous septum is very frequently met with. It was formerly, and is still by many, regarded as a sequence of syphilis only ; but I am convinced that syphilis is but an unimportant factor in its production. The exanthemata, small-pox, typhoid fever—especially scarlet fever and measles, as well as frequent attacks of ordinary catarrhal rhinitis, give rise to it. A child, for instance, has scarlet fever or measles. During the progress of the disease the mucous membrane covering the septum becomes inflamed, superficial erosions occur, which continue long after all febrile symptoms have disappeared, the secretions col*lecting, become* hardened, causing annoyance and sen*sation of uneasiness.* The child uses its finger to re move or dislodge the crust. With each forcible removal a certain amount of destruction of tissue takes place. The perichondrium is finally reached, which becoming eaten through, the cartilage is laid bare; ulceration, and finally perforation takes place. The tearing away of the crusts still goes on, and the perforation continues to enlarge with time. The slight amount of blood which follows the tearing or forcible removal of the crusts alarms patients, and the fear of cancer or disfigurement of the features is ever before them. It is rarely, however, that we have a sinking or falling in of the external nose; and it is astonishing how large a perforation may exist without any external evidence; so long as the superior border is not involved there will be no disfigurement that can be recognised externally. Syphilis does not necessarily act as a cause, but when it does, the destruction of tissue extends more rapidly. The majority of these cases are non-specific in their origin. Of course, occurring in one who has a syphilitic history, it would be well to infer that the disease exerts its influence, and treatment should be instituted accordingly. If it is due to syphilis, it would probably be the result of the breaking down of a gumma or the ulceration resulting from specific perichondritis of the septum, or the sequence of the mucous patches of the secondary form.

[1] Mackenzie, of Baltimore, has found it of frequent occurrence in laborers employed in chromic acid works; he attributes the cause to the irritating effects of the fumes of the acid.

TREATMENT.—The treatment of these cases is very simple. Morning and night the secretion should be removed; first, by softening it to favor its separation by means of borax—about eight or ten grains to the ounce of warm water, after which vaseline or the unguent petroleoli, or of benzoate of zinc, should be applied to the edge of the cartilage, to prevent the secretion hardening and becoming firm and adherent. If the patient is able to attend at my office, after carefully removing the hardened secretion by means of a borax spray, I apply a solution of sulphate of copper, grs. 15 to the ounce of water, carefully, by means of the cotton holder to the ulcerated surfaces. It is the best astringent we have for this purpose. Nitrate of silver, chloride of zinc, and iodine are too irritating, and tend rather to increase the destruction of tissue. Of course the lost cartilage cannot be reproduced, but by the above simple treatment we cannot fail to bring about healing of the ulceration and prevent its progress. It is a condition to which the patient must always give a certain amount of care and attention; otherwise it will continually give annoyance in the way of bleeding, caused by the forcible removal.

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[1] *Mackenzie* (*J. N.*)—Proc. Am. Med. Ass., N. Y. Med. Rec., Vol. XXV., No. 19.

CHAPTER IX.

EPISTAXIS.

EPISTAXIS.—In the common forms of hæmorrhage from the nose the services of a surgeon are unnecessary, and it is only when it becomes frequent and alarming that he is called in.

CAUSES.—The causes may be traumatic, from a blow or external injury of the nose; a foreign body; a tumor, or malignant polypus; erosions of the mucous membrane from catarrh, especially the strumous or syphilitic variety; the ulceration of ozæna; the fungous granulations which form around the necrosed bone frequently bleed; the ulceration of the cartilage of the septum; a perforation of the septum; general plethora, or the opposite conditions anæmia and purpura hæmorrhagica. It may follow a cranial injury, and it is frequently in these cases an indication of fracture of the bones of the skull; it may come from inhaling irritating gases or powders, or from violent mental excitement; it may occur during *coitus*, and on the other hand extreme continence may produce it; living in hot rooms; hot baths or bathing portions of the body with cold water; over indulgence at the table, drinking habitually rich wines by those leading sedentary inactive lives; or, on the other hand, those who are illy nourished on improper food and are compelled to reside in unfavorable hygienic surroundings, may become subject to it. Ascending high mountains or going up in balloons to a height at which there is a diminution of atmospheric pressure, change of climate from a moist and heavy to a dry, rarified air; the suppression of bleeding piles, or vicarious menstruation, or the sudden suppression of the perspiration, are all exciting causes. It is very common in the acute fevers, especially in the exanthemata, and diphtheria, in which latter case it is regarded as a very unfavorable symptom. It sometimes occurs epidemically, and in some cases there is an hereditary tendency. [1] J. Cochrane reports a case complicated with an epileptiform seizure.

TREATMENT.—Ordinarily, hæmorrhage from the nose can be arrested without much difficulty, but numerous cases are on record in which, notwithstanding all known means were resorted to for arresting it, fatal results followed. We should first ascertain the cause, and after arresting the bleeding for which we are called in, endeavor to prevent recurrences. If from a nasal tumor or polypus, removal should be resorted to; if from ulceration of the mucous membrane, or necrosed bone, the proper treatment described under the appropriate chapters. If the cause is constitutional, it should be ascertained; and if from the suppression of a flux, a restoration of that discharge should be brought about. For the immediate arrest of the hæmorrhage, plugging of the nares anteriorly and posteriorly by means of the tampon, injections of powerful astringents by means of spray; the syringe or insufflations; the application of cold to the spine, the raising of the arms vertically and the head thrown back, hot foot baths, etc. [2] Dr. J. L. Little, of New York, reports four cases, of a hitherto undescribed lesion as a cause of epistaxis. He discovered in these cases a small artery from an

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Cochrane (J.)—Brit. Med. Jour., Lond., 1879, II., 170.

[2] *Little (J. L.)—Hosp.* Gaz., N. Y., 1879, VI., 5.

erosion on the septum just beyond the orifice of the nostril near the column. [1] Lefferts has reported similar cases. A few applications of the sulphate of copper brought about healing. [2] Jonathan Hutchinson of London, has arrested very severe epistaxis by hot foot-baths. Injections of perchloride of iron may be attended with fatal results, especially if too freely used and if any portion of it is permitted to flow into the larynx and trachea. There is a case on record of death from laryngeal spasm brought about by attempting to inject a strong solution of the perchloride of iron into a laryngeal papilloma. [3] Malherbe used an injection of 25 grains to 125 grammes of water; pharyngitis and bronchitis followed, and death resulted. The right lung was found upon post-mortem examination to be gangrenous. [4] Gaillard reports a case of death from the injection of iron. The injections, however, were directed by a druggist. The post-mortem showed dark stains upon the dura mater and on the olfactory lobes caused by the absorption of the iron.

In severe cases the tampon is probably the safest and most effectual means of arresting this form of hæmorrhage, although in spite of it, death sometimes ensues; but in these cases I am inclined to think that it has been improperly applied. [5] Frédet reports a case which was checked by the tampon, and the hæmorrhage returned the next day. The tampon was then inserted anteriorly and posteriorly; death ensued.

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[1] *Lefferts.*—Practical Point Concerning Epistaxis, Phila. Med. News, Vol. XL., No. 4, 1882.

[2] *Hutchinson.*—Med. Times, and Gaz., 1879, Vol. II., 689.

[3] *Malherbe.*—Jour. de Méd. de l'ouest. Nantes, 1880. Vol. XIV., 108-111.

[4] *Gaillard.*—Courier Med. Paris, 1881. Vol. XXXI., 238.

[5] *Frédet.*—*De* l'epistaxie grave, etc. Union Med., Paris, *1880. XXIX., 467.*

He reports still another case in which the patient lost a pint of blood in twenty-five minutes, the hæmorrhage returned in forty-eight hours. The tampon was again resorted to, and its use was continued for two weeks, when it was abandoned, the patient being cured; he had also received internally perchloride of iron, sulphate of quinine, and ergotine in free doses. Low reports two cases of epistaxis which he checked immediately by the tampon, but the patients died from cerebral apoplexy. Similar cases are reported by [1]Cazalis, Portel, Frank, and [2]Watson. The tampon should not be allowed to remain longer than forty-eight hours, or septicæmia may be developed from excessive suppuration. [3]Calmettes reports a very interesting case in which he discovered a small aneurism on the inside of the ala, resembling a small clot of blood from which the blood would flow at the slightest touch; it was cured by the galvano-cautery. The only other cases of this kind reported are two by [4]Michel of Cologne, differing from the above in being situated upon the septum. One was a woman sixty-three years of age, who for twelve years after the cessation of her periods suffered from nose-bleeding. The cautery was applied in each of these cases with excellent results. In applying the tampon to the posterior nares, Bellocq's canula may be used, but a more simple plan is to take a soft elastic bougie, insert a piece of thread through the opening at the end to be introduced, carry it through the inferior meatus below the soft palate, seize one end of the string by means of forceps, then draw the thread through the mouth and attach to it lint or cotton. I use generally Rohland's styptic cotton, well known in New York. The same procedure is resorted to for the other side of the nose. Having attached the cotton, traction should then be made upon the string until the cotton comes in contact with the septum; the string is allowed to protrude from the nostril. The anterior nares is then packed as tightly as possible; and I have never known a case in which bleeding was not successfully arrested when tamponed in this manner; provided it does not come from an aneurism as described by Calmettes, or from cases similar to those of Dr. Little.

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[1] *Cazalis.*—Ann. Soc. d'hydrol. Méd. de Paris, 1877–1878. XXXIII., 388–404.

[2] *Watson.*—Op. cit.

[3] *Calmettes.*—Le Progrés Med. No. 40. 1881.

[4] *Michel.*—*Die* Krankheiten der Nasenhöhlen, etc. Berlin, *1876.*

CHAPTER X.

TUMORS OF THE NASAL CAVITIES.

Tumors of the nasal cavities occur in a variety of forms and may be classified as follows: Myxomata or Gelatinous Polypi; Adenomata; Fibromata; Naso-Pharyngeal Polypi; Papillomata; Angiomata; Enchondromata; Exostoses; Gummata; Cystomata.

MYXOMATA OR GELATINOUS POLYPI.—The gelatinous or mucous polypi are the most frequently met with of the several varieties of nasal tumors. They belong to the class of myxomata, and are usually the result of chronic inflammation of the mucous membrane, or chronic hyperæmia; but they frequently occur in cases in which there is no other evidence of pathological changes in the mucous membranes. They generally occur in adult life or elderly people, although they are sometimes met with in very young subjects. My youngest case was a child about eight years old. They spring from the middle and inferior turbinated bones, more rarely from the superior. In fact, some authorities claim that they are never attached to the superior bones. They very rarely spring from the septum.

Microscopic Appearances.—There are two varieties of cells met with. The majority are angular and stellate, with long anastomosing prolongations and trabeculae; the others are isolated and fusiform, oval, or spherical, possessing one or two distinct nuclei. The intra-cellular substance yields large quantities of mucin. The blood vessels are not numerous, and a few elastic fibers are sometimes seen between the cells.

Physical Characters.—They are of a soft gelatinaform consistence, and of a pale grayish or reddish white color. They are always pedunculated, and if completely and thoroughly removed, including the pedicle, they rarely recur. According to Seiler[1] this form of tumor consists of localized hypertrophies of the mucous membrane which have undergone myxomatous degeneration; and recurrence is not due to re-growth from the pedicle, but to a new formation of polypoid growths caused by irritation, and if all the polypi were removed there would be no recurrence. These tumors are usually multiple, and if attached to the anterior surfaces of the turbinated bones, they can be distinctly seen with the aid of a strong light after dilating the nostrils, and perhaps the number ascertained by careful examination; but when attached posteriorly, that is, to the most dependent portion of the turbinated bones, they cannot always be seen through the anterior nares, and the rhinoscope will alone enable you to make a diagnosis. In some cases they are so large that they hang downward and come into actual contact with the posterior surface of the soft palate.

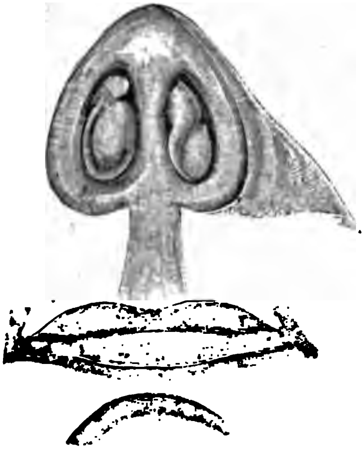

FIG. 37.

Polypi attached to the middle turbinated *bones, from a cast taken by* Dr. Goodwillie *of a patient at the* Metropolitan Throat Hospital.

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[1] *Seiler.*—Trans. Am. Laryngol. Ass'n., 1882, p. 22.

SYMPTOMS.—The patient has all the subjective symptoms of chronic rhinitis or nasal catarrh; fullness or a feeling of stuffiness in the head, nasal respiration impeded, if not entirely obstructed, a constant discharge of secretion which is increased in damp, moist weather—the polypi being hygrometric.

Asthma is sometimes produced by their presence in the nasal passages. [1] Voltolini, in 1871, reported the first case on record of asthma from this cause. [2] Fraenkel, in 1881, read a paper before the Berlin Medical Society upon the connection between asthma and nasal disease. [3] Todd, of St. Louis, reports an interesting case of asthma caused by polypi in the nose. [4] Thudichum has met with several cases. In the latter part of the year 1878 a young girl, age about sixteen, was brought to me from Canada, with the statement that she was a confirmed asthmatic, and that it was rarely possible for her to obtain sleep at night, except by the burning of nitrate of potash paper in her bedchamber. She was large, well developed, and presented the appearance of perfect health. Upon examining her nose, I found a large mucous polypus attached to the anterior surface of the middle turbinated bone, completely filling the left anterior naris and blocking up the entrance to the inferior meatus. I removed this growth, and she had no recurrence of the asthmatic attacks after that. A few months later I was consulted by a gentleman about fifty-eight years of age, who had been subject to asthmatic attacks for many years. Upon examining his nares I found slight deflection of the septum towards the right, and upon that side, posterior to the point of deflection, an immense gelatinous polypus attached to the middle turbinated bone, anterior surface. The removal of the polypus, which was accomplished without difficulty, relieved him of further asthmatic attacks, and a marked improvement in his general health followed.

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[1] *Voltolini.*—Galvano-kaustik, 1871, s., 246, u. 312.

[2] *Fränkel.*—Berlin, Klin, Wochenschi. No. 16, 17, 1881.

[3] *Todd.*—*St. Louis* Cour. Med., 1881.

[4] *Thudichum.*—*Lancet*, Lond., 1880. I., 594, 596.

When the polypi have high attachments, or are attached posteriorly, and in this way escape detection from ordinary examination of the anterior nares, the case will probably be regarded as one of nasal catarrh, until a rhinoscopic examination shall have been made.

DIFFERENTIAL DIAGNOSIS BETWEEN NASAL POLYPI AND CHRONIC RHINITIS.—If the polypi or growths are unilateral, the discharge will be confined chiefly to that side, as will also the feeling of stuffiness and obstruction to breathing. Upon blowing the nose or washing it thoroughly by means of spray, douche, or syringe, a feeling of clearness and freedom in nasal respiration will be experienced in chronic rhinitis, from the removal of the accumulated secretion, which will be impossible if growths are present. Again, if the polypi are attached to the anterior surface of the bones, the patient will be sensible of the to and fro movement imparted to them during forcible respiration through one or both sides of the nose. A foreign body may simulate a polypus ; but foreign bodies are almost invariably—I may say without exception—found in subjects younger than those in whom polypi have ever been known to develop. The discharge caused by the presence of a foreign body will be sanguino-purulent and fœtid, especially if the body has been lodged in the nose any length of time. In the rhinoscopic mirror; in some varieties of hypertrophied mucous membrane from chronic rhinitis, enlarged middle or inferior turbinated bones present very much the appearance of a polypus, and may be misleading to the inexperienced. A large polypus springing from the middle turbinated bone anteriorly, may be confounded with œdematous or infiltrated mucous membrane. By gently raising a portion of the dependent membrane upon the end of the nasal probe, and then making slight pressure against the bone, the infiltration will disappear, and the distance between the point of the probe and the bone will be perceptibly diminished. On the other hand, the same amount of pressure upon a polypus will make but slight impression.

TREATMENT OF NASAL POLYPI.—Numerous methods have been proposed from time to time for the removal of these tumors, but the only radical treatment for the prevention of recurrence are the means devised by surgery. Before the introduction of the present methods of examining the nares, the operations resorted to were painful, unscientific, and barbarous. One method was, in the case of the polypi being very large, as follows: The surgeon introduced the index finger of one hand through the nostril, the other through the mouth upward and behind the palate, one forced upward and the other backward; the rude force obtained in this way was employed in tearing out whatever the fingers came in contact with. Even to this day general surgeons, who are not skilled in the use of the rhinoscope and the other means for examining the nares, introduce a pair of large forceps, grasp whatever they can, and pull. If the polypus is large it will probably be brought away by this method; but there is an equal chance of the operator tearing and lacerating the mucous membrane, destroying the turbinated bones, causing profuse *hæmorrhage* and intense suffering to the patient, *all of which may* and should be avoided. We have several admirable snares; Hilton's, Wilde's, Schrœtter's, Jarvis', Bosworth's modification of the latter, and several others, which may be employed. In operating with the snare, the patient sits opposite the operator, in the position as described for examining the nares, and when the polypi are confined to the anterior nares they can be removed with but little difficulty and with certainty—even those of minute size. If attached to the posterior and inferior surfaces of the turbinated bones, the wire should be carried through the inferior meatus, and then by delicate manipulations guided by the sense of touch and with the aid of the rhinoscope when necessary, the proper direction can be given to the wire. With a little care it can be made to encircle the growth and then tightened. It is always advisable, when possible, to seize it at or near the pedicle, and if a steady and slow traction is made upon the wire, the growth will almost surely be brought away entire. As a rule, the hæmorrhage attending this operation is very slight, and the pain not very great, especially when the polypi are of large size; but in removing the smaller ones it is sometimes impossible to avoid snaring more or less of the mucous membrane, and the removal of this inflicts whatever pain the patient may experience. I formerly used the forceps, but of late years have employed only the snare, for the reasons that the pain and hæmorrhage are less, and I find less difficulty in encircling the growths with it and removing them entire, including the pedicles, than with the forceps. Another objection to the forceps, is the risk we incur of destroying the sense of smell by their use and the certainty of bruising and lacerating the mucous membrane and inflicting permanent injury to a greater or ss extent upon the turbinated bones. Thudichum has known them to produce fracture of the septum, dislocation of the turbinated bones, and membranous adhesions, causing stricture or stenosis, and he regards their employment as one of the most barbarous proceedings in surgery. If there are not more than two or three polypi on one side, I usually complete the operation with the snare at one sitting, but if the number should be larger, for instance from six to eight, or even more, on each side, I find that three or four sittings at intervals of several days, are sometimes necessary for their removal.

[1] Morell Mackenzie recommends removal by abcission by means of the cutting forceps, and because of the pains, he seldom practices evulsion.

[2] Zander passes a thread through the polypus as high up as possible with a needle, after which a thread loop by means of Bellocq's canula is passed around it, and the growth cut away. This procedure is more tedious, and is quite, if not more painful, than the snare, and is not to be commended.

The galvano-cautery loop has many enthusiastic advocates, especially [3]Thudichum, who first employed it in nasal surgery, and who uses it to the exclusion of all other methods. He claims that it is painless and bloodless, and in every way to be preferred to all other means. I have employed the cautery loop in these operations, but do not think it possesses any advantages whatever over the cold wire snare method above described.

But in cases of large and multiple polypi, I sometimes destroy the attachments, after removal of the polypi with the snare, by means of a galvano-cautery stub, the same used by me in the destruction of hypertrophied mucous tissue. In cases of very large polypi attached posteriorly, and in contact with the soft palate, the operation of button-holing the soft palate, as recommended by [1]Maisonneuve, has been performed, but there is no necessity for this operation if any of the excellent snares, above referred to, are obtainable.

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[1] *Mackenzie, Morell.*—Nasal Polypi, etc. Arch. Laryngo. Vol. III., No. 2.

[2] *Zander.*—Deutch Med. W'chsch., No. VII. 1880.

[3] *Thudichum.*—On Polypi, etc. London, 1877.

Of therapeutical applications we have insufflations of tannic acid recommended, and injections of perchloride of iron; zinci chlorid.; tannic acid; and other agents by means of the hypodermic syringe. [2]Donaldson of Baltimore, recommends the destruction of the polypi by chromic acid. He claims that when cautiously used, it causes neither pain nor hæmorrhage, and can be kept perfectly under control; he employs a solution of one hundred grains to the ounce. His mode of applying it is to moisten the mucous membrane with a lead solution, then taking the paste of chromic acid on a glass rod, very thin and pointed, he sticks it into the center of the polypus. It acts immediately, crumbling off of the growth ensues, and it is easily removed by the forceps. After the removal of the polypus, he employs a snare to complete the operation upon the pedicle, and claims excellent results by this method in his practice. London paste, Vienna paste, and glacial acetic acid have also been recommended.

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[1] *Maisonneuve.*—Holmes' Surgery, page 303.

[2] *Donaldson.*—Arch. Laryngol. Vol. IV., No. 3.

CHAPTER XI.

ADENOMATA AT THE VAULT OF THE PHARNYX.

ADENOID VEGETATIONS AT THE VAULT OF THE PHARYNX.—Among the earlier laryngoscopists, [1]Czermak was the first to observe this condition. [2]Türck, [3]Semeleder, and [4]Voltolini, have written upon the subject, as well as numerous others, more especially [5]Loewenburg, and [6]Meyer, while, in this country, the subject has been prolific of monographs. Adenoid vegetations consist of a true hypertrophy of the glandular tissue of that region. The large group or aggregation of follicles, known as the pharyngeal or Luschka tonsil, when hypertrophied, give rise to it. Microscopically, the vegetations consist of cylindrical epithelial cells, grouped together and separated merely by a small amount of connective tissue, in which are contained blood vessels. It occurs mostly in early life, and especially in those of strumous diathesis. According to Loewenburg, those of lymphatic temperament are more predisposed to these growths. Heredity, he thinks, plays a marked rôle in the origin of the malady, and it occurs without reference to the social position of the patient, or to the climate.

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[1] *Czermak.*—On the Laryngoscope. London, 1861.

[2] *Türck.*—Krankheiten des Kehlkoppes. Wein, 1866.

[3] *Semeleder.*—On Rhinoscopy. New York, 1866.

[4] *Voltolini.*—All. Wein. Med. Zeitung, No. XII., 1880.

[5] *Löwenburg.*—*Gaz.* d' hop. Paris, 1878.

[6] *Meyer.*—*Med. Chir.* Trans. Copenhagen. Vol. LIII.

Symptoms.—Those of chronic rhinitis, which always exist to a greater or less extent. We have the dropping of secretion from above and behind the palate, and in proportion to the size of the mass and its extending downward, will the obstruction of the nasal respiration exist. And this obstruction is one of the most common causes of the pernicious habit of mouth-breathing. "The habitual mouth-breathers can be at once recognized: there is no mistaking them, as the practice stamps itself indelibly upon the physiognomy. The retracted lips, open mouth, receding gums, protruding teeth—especially the upper ones—shrunken alæ, diminished size of the orifices of the nostrils, the wrinkles at the outer angles of the eyes; and the lines extending from the alæ of the nose to the angles of the mouth, give the wearer an idiotic and silly expression."[1] There is impaired hearing and even deafness in extreme cases, arising from direct pressure upon the orifices of the Eustachian tubes, or from the congestion which may extend into them. There is alteration of voice, this becoming nasal in character; and there is sometimes a difficulty in the clear enunciation of certain consonants, for instance, p, b, d, t, k. Meyer lays great stress upon the peculiar *dead* character of the speech, differing from the dull and thick speech of enlarged tonsils.

Rhinoscopic Appearances.—The entire vault may be covered with the enlarged follicles, or several may be blended together with a distinct space between; or we may find the aggregate forming a continuous mass.

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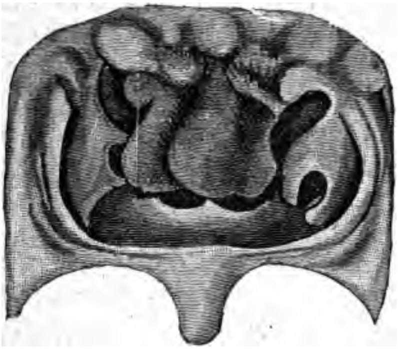
[1] *From "Habitual* Mouth-Breathing."—WAGNER.

The size and appearance of the growth will greatly vary; in some cases it will extend from side to side, encroaching upon the Eustachian orifices; and in others, from above downward, blocking up the posterior orifices of the nasal passages. The following excellent plate is from a drawing from life by Prof. Lefferts. Meyer describes a variety of adenoid vegetations which I think have never been met with in this country, at least I have been unable to find any recorded cases, and so far as I can gather from conversation with those engaged extensively in throat and nose practice, they are wholly unknown. According to Meyer there are three varieties; the crested, cylindrical, and the flat form; and these he subdivides into the hard and soft. The posterior and superior walls, or the lateral walls around the apertures of the Eustachian tubes, in connection with other localities, are their places of election. The direction of the folds is perpendicular, but transverse, upon the superior wall or vault of the pharynx. The vegetations on the posterior *and superior* walls are an hypertrophy of the *pharyngeal tonsil.* His attention was first directed to

FIG. 38.



Adenoid Vegetations at the Vault of the Pharynx.—LEFFERTS.

this condition by the case of a young lady who had the peculiar dead voice. Rhinoscopy being impracticable, he passed his finger upward and behind the soft palate and into the cavity, and was much astonished to find soft masses, which, giving way to the finger, felt very much like a bunch of earth worms, and hanging down from the roof of the pharynx completely closed up the posterior nares. Free bleeding followed the digital exploration. This one case led him to explore whenever the deadness of pronunciation occurred, and the growths were invariably met with. They may spring, he says, from any part of the naso-pharyngeal cavity, with the exception of the septum narium. He says the rhinoscope is insufficient for enabling one to make a diagnosis, and recommends the introduction of the finger in all cases. In twelve months he had 102 cases in his private practice; he thinks struma plays no part in their development; relies upon operative measures altogether for treatment; and states that recurrences have not taken place when thoroughly removed.

Differential Diagnosis.—Any condition which impedes nasal respiration will give rise to the subjective symptoms of adenoid vegetations; enlarged palatal tonsils by pressing the soft palate upward and backward, will obstruct nasal respiration; a deflected septum; chronic rhinitis with hypertrophy; nasal polypi; and naso-pharyngeal tumors. In case of the latter, if an ocular examination by means of the rhinoscope will not enable one to establish a correct diagnosis, then a digital exploration should be resorted to. The firm, hard, resisting sensation imparted to the finger would be characteristic of a *fibroma.*

Treatment.—The vegetations sometimes disappear spontaneously at, or shortly after the age of puberty: of this I think there is no doubt from the fact that the condition is rarely met with in adults as compared with children. I have frequently had children of ten and twelve years of age under observation, and have known it to disappear in them after puberty without special treatment. If the growths are sufficiently large to cover the entire vault, and if nasal respiration is in any degree obstructed, or hearing at all impaired, surgical interference becomes necessary. I use a pair of post-nasal forceps, as represented in fig. 39 and 40, and by depressing the tongue with the spatula, or with the index finger of my disengaged hand, I usually have no difficulty in introducing the forceps behind the palate and seizing the growth; I remove as much as I can on several introductions at a sitting, and my experience has been that the removal, even of a portion, will cause the remainder to shrink and shrivel, and in

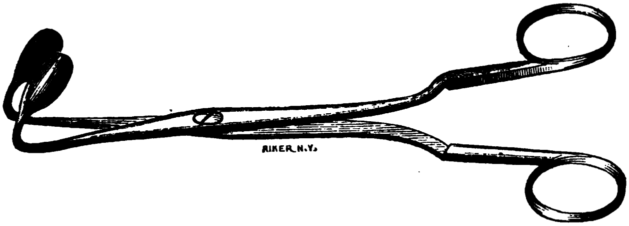


FIG. 39.

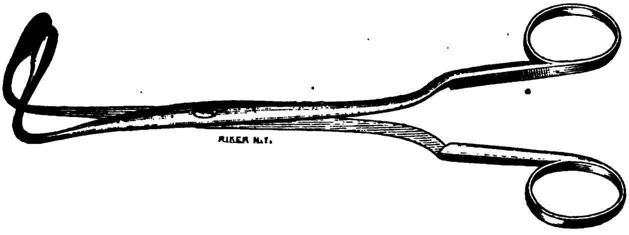


FIG. 40.

course of time total disappearance will ensue. Loewenburg uses a forceps with a double curve like the letter S. which he introduces upward and behind the palate, as well as a curette, which may be introduced through the anterior naris or behind the palate, and removal is effected by scraping off the growths. [1]Lefferts does not approve of surgical interference in the case of young children, unless the vegetations are large enough to interfere with nasal respiration, and threaten danger to the middle ear; he believes atrophy takes place toward puberty. In his operations he employs Woakes' forceps as modified by Semon. [2]Justi employs a common sharp spoon, with a straight shank if introduced through the anterior naris; and if into the naso-pharyngeal space, it is curved. The sharp spoon may be fastened to a ring placed upon the index finger, which it should fit exactly, and then introduced into the naso-pharyngeal space behind the palate. He has employed it in thirty cases, with twenty-six cures. [3]Hartmann uses the wire loop in cases in which it can be guided by means of the rhinoscopic mirror. In cases where the latter cannot be employed a special arrangement of the wire écraseur is used, the wire being inclosed within a ring. The ring is pressed up against the roof of the pharynx so that the growths

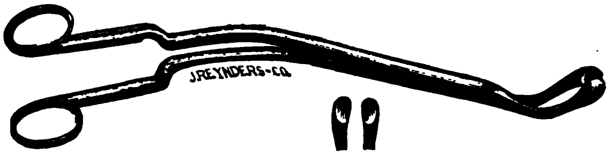


FIG. 41.

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[1] *Lefferts.*—Phila. Med. News, Vol. XL.

[2] *Justi.—Wein :* Med. W'chsch. No. 29, 1880.

[3] *Hartmann.*—Schmidt Jahrbücher, Bd., 183, No. 3.

are pushed within it and then crushed off. Meyer's instrument consists of a little ring of a transverse oval shape, one edge sharp, on a flexible stem, and inserted into a roughened handle. This is introduced through the nostril by the right hand, the index finger of the left being introduced above the palate, which guides the cutting ring in scraping the vegetations from their attachments. Copious bleeding follows the operation. The galvano-cautery may be employed, not the écraseur, but the stub; and shrinking of the mass will follow a few applications. But as the majority of our patients with this affection are young children, we encounter a difficulty in the application of the agent, either through the anterior nares or carried behind the palate, from their restlessness, which is almost insurmountable. [1] Tauber uses the galvano-cautery, and suggests that a vertical incision be made on one side of the soft palate near the arch, and another transverse, and about an inch long, at right angles to it. Turning out this triangular flap the entire posterior wall of the pharynx, and its vault, will be clearly exposed. This operation is too heroic and formidable for the simple result sought after. I have had excellent results from local applications of iodine, chloride of zinc, and nitrate of silver; at the same time keeping the inferior meatus on each side dilated by the frequent passing of metallic sounds. The wire snare or écraseur may be successfully employed either through the anterior or posterior nares.

When occurring in children, attention should be given to the hygienic surroundings and improvement of their general health. Fresh air, nourishing diet, consisting of bread and milk, oatmeal porridge, cracked wheat, etc., in preference to animal food, with iron, cod-liver oil or maltine,

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[1] *Tauber.*—*Cinn.* Lancet and Clinic, April, 1880.

Case 1.—Master F., a lad of fourteen, was brought to me for treatment for nasal catarrh. He was unable to breathe through his nose, and complained of a constant dropping of mucus into his throat from above and behind the palate. An examination revealed a large adenoma in the vault of the pharynx, which extended downward and partly occluded the nasal passages posteriorly. I removed several large portions with the forceps, and made applications of the iodine solution with the post-nasal brush three times a week, and at the same time practiced daily dilatation of the inferior meati by metallic sounds. He was under treatment about one month. Two years later I saw him. His general health was excellent, he could breathe without difficulty through his nose, and the discharge of mucus had ceased. A mere trace of the adenoma only remained.

Case 2. Miss L., a delicate, nervous girl of thirteen, was brought to me for treatment for catarrh, the most prominent symptom of which was the dropping of mucus from above and behind the palate. Nasal respiration was scarcely interfered with. An examination with the rhinoscope revealed a very large adenoma in the vault of the pharynx. As it did not interfere with her nasal respiration nor her sense of hearing, and as she was very nervous and timid, I decided not to resort to surgical treatment. Applications of the iodine solution with the post-nasal brush were made for a month, and she was ordered maltine, generous diet, and to have as much out-door exercise as possible. She passed from my treatment. Seven years later she again consulted me for a slight throat trouble. During this interval she had married and become a mother, and had developed into a strong and able-bodied woman. There was no trace of the growth remaining, excepting a few small follicles.

This case illustrates the fact that surgical interference is wholly unnecessary when hearing and nasal respiration are not interfered with, and is also an example of atrophy of the growth after puberty.

CHAPTER XII.

FIBROMATA.—NASO-PHARYNGEAL POLYPI.

FIBROMATA.—Fibromata may develop in any portion of the nasal cavity; the floor of the fossæ, the turbinated bones, or lateral walls, or the base of the skull, in which latter case they assume the name of Naso-Pharyngeal Tumors. They are distinguished from mucous polypi by their firm, hard, dense structure, darker in color, and not hygrometric; and in blowing the nose the patient is not conscious of the oscillatory, or to and fro movement, which is experienced in the gelatinous form. They grow with rapidity, and in the direction in which there is the least resistance to their development. They are more frequent in young persons. Gelatinous Polypi are more common in middle aged or old persons.

The subjective symptoms are those of chronic rhinitis.

TREATMENT.—Removal by surgical operation, the forceps, cold wire-snare, galvano-cautery loop, or the knife. The simple fibromata are benign in their character, and if thoroughly removed are not liable to recur. The recurrence of benign tumors in this region frequently depends upon imperfect or incomplete removal.

NASO-PHARYNGEAL POLYPI.

Naso-Pharyngeal Polypi are so-called, because *they have* their origin in that portion of the base of the skull which forms the vault of the pharynx. They vary in size and shape, are usually globular, or oval, irregular in their outlines, depending greatly upon the direction in which they extend, which is usually that in which there is the least resistance. They start from the periosteum or connective tissue, and sometimes increase rapidly in size, are firm and dense to the touch, and of dark or purplish red color. Microscopically, according to [1] Green, the fibers which constitute the chief part of the growth may be closely interlaced without any definite arrangement, or they may be grouped in bundles of various sizes. They are frequently arranged concentrically around the blood vessels. The cells, or, as they are usually called, the connective tissue corpuscles, are minute spindle shaped, fusiform or stellate bodies, and contain in some cases an oval nucleus. Usually they contain but few blood vessels. If the prolongations extend into the nasal cavities, they may cause separation of the nasal bones, producing what is known as the frog-face. The mucous membrane may be destroyed; the septum perforated or absorbed; and both the soft and hard palate may be pressed downward and forward. They may invade the antrum, and even get under and behind the orbital plates, disturbing the globe of the eye, destroying vision and producing frightful and disgusting deformities. They may occur at any age, even at the extremes of life. [2] Winter discovered one in a fœtus of seven months. If found in a subject beyond the middle period of life, it is generally presumptive evidence of its malignancy. The statistics of [3]Massé, as well as of [1] Lincoln, of New York, show that the greatest number of cases occur between the ages of fourteen and twenty-five. They occur more frequently in males than females. In fifty-eight cases collected and reported by Lincoln, forty-eight were males, eight females, and in two the sex was not stated. Figure

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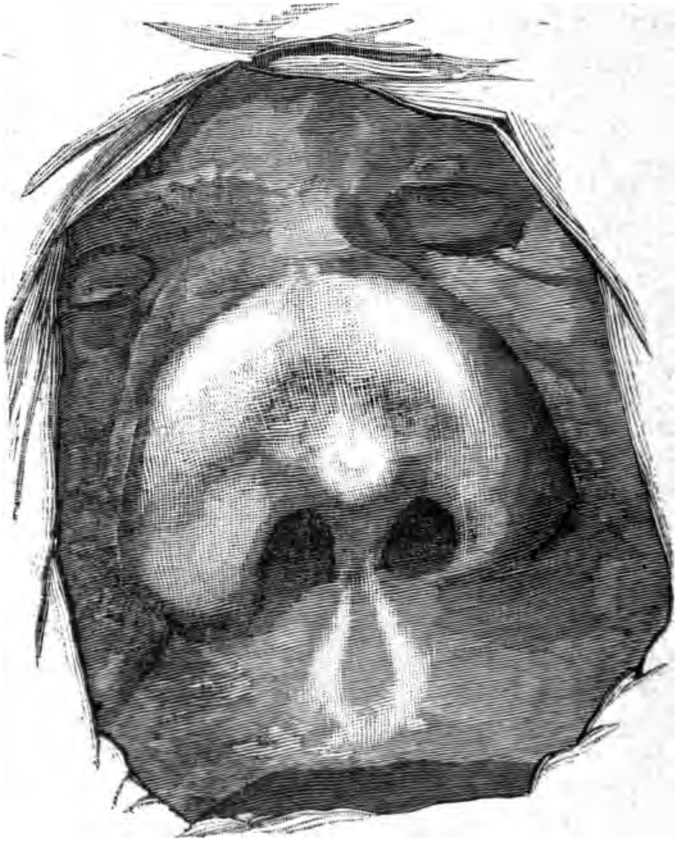
[1] *Green.*—Pathology, and Morbid Anatomy. London, 1881.

[2] *Winter.*—Holmes Surgery, Vol IV.

[3] *Massé.*—Des Polypes naso pharnygiens. Paris, 1864.



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[1] *Lincoln.*—Trans. Am. Laryngol. Ass., 1883, Vol. IV., *No. 4.*

No. 42 is taken from a cast from life by my friend Dr. Goodwillie. The patient—a woman forty years of age—called at the Metropolitan Throat Hospital for treatment. The tumor was attached to the base of the skull, a large mass extended downward below the soft palate and prolongations through the anterior nares and beyond the nostrils; separation of the nasal bones had taken place to such an extent that the frog-like face characteristic of extreme cases, was very well represented. The woman's friends declined to permit her to submit to the operation for its removal, when informed that the operation itself was attended with some risk of life. The case was lost sight of from that time.

SYMPTOMS.—The subjective symptoms are those of chronic rhinitis or mucous polypus; obstructed nasal respiration; pain extending along the frontal sinus; a muco-sanguino-purulent discharge; in some cases bleeding from the nose; impairment or loss of the sense of smell; deafness from pressure upon the Eustachian orifices, and in cases in which the orbital plates have been encroached upon, impairment or loss of vision. A careful examination of the anterior nares by means of the speculum, and of the post-nasal region with the rhinoscope, will frequently enable us to ascertain the actual attachments of the growth, whether or not it has invaded the anterior nares, or is confined to the upper pharyngeal region. Even with these aids at our disposal, a correct diagnosis is sometimes a matter of extreme difficulty. According to [1] M. Verneuil, no one can tell certainly that a tumor extends into the cranial cavity. [2] Sands, of New York, states that post-mortem examinations have often revealed perforations of the cranial bones and contact of the polypus with the dura mater, where no cerebral symptoms had occurred during life. [1] Cruveillhier reports a case of a mass having the appearance of a fibrous polypus occupying the right nostril, which was, on post-mortem examination, found to consist of the dura mater, thickened, exhibiting a fungous surface, and containing within it the corresponding parts of the arachnoid and pia mater along with some cerebral substance and pus, the whole forming a hernia through the cribriform plate of the ethmoid bone. Numerous other cases are on record which illustrate the great difficulty encountered in establishing a diagnosis in these cases. The difficulty, of course, will not be in deciding upon the presence of a tumor, but cases will occur, even with the rhinoscope and other accredited methods of examining these parts, in which it will be impossible to trace all the attachments of the growth and to determine which cavities have been invaded by the prolongations.

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[1] *Verneuil.*—Polypi Naso-Pharygiens. Gaz. d'hop. Paris, *1879. LII. 785, 787.*

[2] *Sands.*—*Archives* Scien. and Prac. Med. June, 1873.

TREATMENT.—For the treatment of tumors confined to the naso-pharyngeal space proper, we have evulsion by forceps, the cold wire-snare, galvano-cautery loop, electrolysis, ligature, injections of caustic solutions, and the knife.

The forceps, such as I employ (see plate), may be introduced behind the palate, the tumor seized and the attempt made to remove it. If the tumor is large, or has several prolongations, this method will not succeed. The force that would be requisite to detach a mass of any size would almost surely be followed by serious hæmorrhage; consequently it is applicable to very few cases. [1] Dupuytren once tried to extract a polypus with the forceps. He succeeded in removing only a few fragments, and the operation was attended with copious hæmorrhage. On the following morning the patient was found dead in his bed. Death was suspected to be due to hæmorrhage. J. C. Foster met with like result. In his case the cribriform plate of the ethmoid bone was found to have been fractured during the operation.

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[1] *Cruveillhier.*—Bull. et Med. Soc. de Paris, 1880. Vol. VI. *206 to 209.*

The cold wire snare, especially that of Schroeter, already referred to, and which I employ in the removal of hypertrophied tissue and gelatinous polypi, as well as the instrument of Jarvis, may be made to answer in some cases, but they are open to the same objection to which evulsion by forceps is, viz., the causation of hæmorrhage. In trying to encircle a tumor in this region with the cold wire snare or the galvano-cautery loop, patience and skill are both required; and in cases in which it is impossible to encircle the whole mass, it would be better to remove it by piecemeal, even if numerous sittings should be necessary. The loop may be carried through the anterior nares to the pharynx, and then, by means of the finger pushed upward, or introduced through the mouth behind the palate and pushed upward, and made to encircle as much of the tumor as possible. The electrodes may then be attached to the battery, and the current let on, and slow but steady traction made upon it downward and forward. If the tumor cannot be entirely removed by one operation, subsequent sittings should be had until all that is practicable has been taken away. Ether may be given, but unless insisted upon by the patient, I think it better to withhold it; for the reason that in the event of alarming hæmorrhage, the patient being conscious and enabled to throw the blood from his mouth, the danger from its entering the air passages would be in a great measure avoided. Lincoln reports as occurring in his own practice, three interesting cases removed in this way. There was no recurrence several years after the operations.

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[1] *Dupuytren.*—Paris, Gernier, Bailliere, 1832, 34.

Electrolysis is not applicable in these cases owing to the hardness and density of the structure of the tumors. It has, I believe, few, if any advocates, at the present day. Sands refers to one case in which 130 sittings were required to effect a cure. The operation by ligature is a tedious process, from which there is danger of pyæmia, meningitis, and also, according to Sands, from the liability of the growth falling at night into the larynx, and thus producing suffocation.

[1]Duplay and [2]Barthelmy have used injections of chloride of zinc, and report that they cause the growths to atrophy, but do not entirely cure them. [3]Verneuil reports a case in which he used injections of chromic acid, the tumor became reduced in size, and from being very firm became soft and atrophied. [4]M. Trélat records a case of cure by slow cauterization.

The suggestion of some authorities, [5]Henry Truslé, Verneuil, and others, of postponing operation when the tumor occurs in youth, as long as possible, so that the

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[1] *Duplay.* Arch. gen. de Med., Paris, 1880, T. CXLV., 353, 361.

[2] *Barthelmy.* Phila. Med. Times, 1880, No. 318.

[3] *Verneuil.* Jour. de méd., et chir. prat., Paris, 1879, 60, 62.

[4] *Trélat.* Gaz. d'hôp., Paris, 1883.

[5] *Bruslè.* De la guérison de certains polypes, et cet., par les *méthodes paliatives*, etc., Paris, 1879, No. 347.

the patient may approach that age when tumors are not liable to return, is unsurgical and not to be commended. The natural termination of these tumors is always death, and the only radical measure we can resort to for relief is an operation, presuming that milder measures have been thought advisable, tried, and failed. The ratio of danger to life will be in proportion to the size of the tumor, number and seat of its attachments. The larger the tumor the more extensive will be the attachments. Therefore, in my opinion, radical measures should be resorted to at as early a day as possible. The advocates of the claims of the cautery-loop speak of the greater successes which it has had over major operations. The danger to life in operations by this procedure is very slight; in fact, absolutely none. But in estimating the relative advantages that it possesses over removal by exsection, we should bear in mind that in the majority of cases in which the latter is performed, the employment of the loop is utterly impracticable. No amount of skill, patience, or manual dexterity will enable the surgeon to encircle the prolongations of a tumor attached to the walls of the antrum, or which has encroached upon the plates of the orbit; and for such cases there is but one method of removal, and while the operations are in themselves dangerous to life from the amount of shock which always follows the loss of blood, the risk from septicæmia and meningitis, still their performance affords the patient the only chance for recovery.

[1]Dieffenbach divides the alæ as far as the margins of the nasal bones, as well as the columna and septum. He turns back the nose and introduces his forceps or scissors for dividing the tumor, and claims to have

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[1] *Dieffenbach.* Surgical Operations. Trans. by J. S. Bushnan.

operated successfully many times by this method. [1]Langenbeck's operation is a division down the median line of the nose by one incision.

The operation through the mouth, known as [2]Nélaton's, but really performed long before his time, consists in dividing the soft palate in the median line throughout its extent and thickness; a longitudinal incision is carried along the posterior half of the hard palate down to the bone; from the anterior extremity of this incision two others are carried obliquely outward, one on each side, to the root of the alveolar process; the flaps of the periosteum and mucous membrane are detached from the bone and deflected outward on either side. The bony palate is next perforated and cut away by means of bone forceps. In this manner a large opening is made into the naso-pharyngeal cavity, and the growth is thereby exposed. Nélaton recommends that the opening should not be closed until some time after the operation, nor until the complete destruction of every portion of the pedicle has been effected. Staphylorraphy may be practiced at any time. [3]M. Denuce cuts through the soft palate only, and then applies the ligature. He claims good results from this operation.

According to Sands, operations "through the mouth have been followed more frequently by fatal results than those of apparently greater magnitude, and as a rule cannot be recommended for their safety or certainty; they avoid disfigurement, but do not guarantee success." I performed the operation through the soft palate some years ago, and as the case is one of unusual interest, I give it in detail. A young man about twenty-six years of age, very large, well developed, and in excellent health, a resident of Tennessee, consulted me for nasal catarrh. An examination revealed nothing in the anterior nares, but there seemed to be an obstruction to respiration in the inferior meatus on the left side. An examination of the posterior nares disclosed a tumor lying horizontally across the posterior border of the septum, and attached superiorly by a prolongation which sprung from the vault of the pharynx. He stated that this nasal trouble had existed for several years. I attempted to encircle the mass by introducing the snare through the right anterior naris. I succeeded, after several attempts, in seizing the most dependent portion, but I failed to detach it. I abandoned this method and employed a pair of stout duck-bill forceps, which I had made for the purpose, introduced them upward and behind the palate, and seized the mass without difficulty. I used all the traction that I thought prudent, but succeeded only in removing a very minute portion. To the sense of touch the tumor was hard and resisting, and in color of a deeper, more dusky red, than the surrounding mucous membrane. I decided to operate through the mouth by incision of the soft palate, and, if necessary, was prepared to perform Nélaton's operation by division of the hard palate. I divided the soft palate in the median line, carrying my incision anteriorly a little beyond its attachment to the hard palate. The edges were then turned aside, and I seized the tumor as high up as I could with my evulsion forceps. No impression was made upon the mass. Finally, after a free use of the finger, aided by the forceps, the tumor was *detached.* Copious bleeding followed, which was *readily* controlled by compression. The operation was performed at the Metropolitan Throat Hospital. The opening of the soft palate was not closed, as I feared that the sutures would probably slough away, and I decided to defer it for a couple of weeks. The patient was sent in a carriage from the hospital a few hours after the operation, to the residence of a relative with whom he was living. I saw him the following day about twenty hours after the operation, and to my surprise found that union by first intention of the divided palate had taken place. The next day I examined him with the rhinoscope, but no portion of the tumor could be discovered. In two weeks he returned to his home in the South. I did not see him again until four years after the operation, when business called him to New York, and he visited me at my office. A rhinoscopic examination revealed not the slightest trace of the tumor. The accompanying plate shows the tumor *in situ* before the operation, drawn for me by a medical friend who could use the rhinoscope as well as the pencil. Plate No. 44 represents *the mass after* removal. It measured 2 1/8 inches *by 7/8 of an inch.* A microscopical examination made

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[1] *Langenbeck.* Deutsche Klinik, 1861.

[2] *Nelaton. Op. Cit.*

[3] *Denuce. Gaz.* d'hôp., Paris.

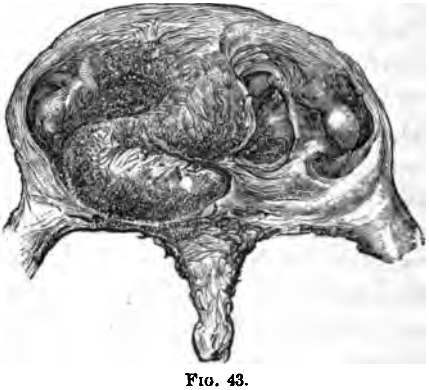

FIG. 43.

from several sections taken from different portions of

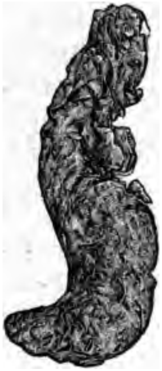

FIG. 44.

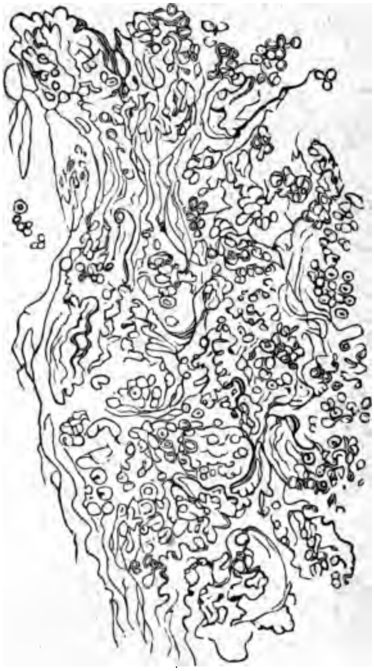

FIG. 45.

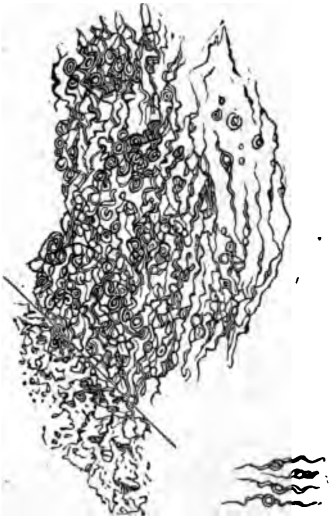

FIG. 46.

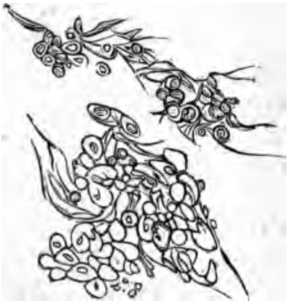

FIG. 47

the tumor showed it to be a fibro-sarcoma. The three figures, Nos. 45, 46, 47, represent the microscopical appearances.

The facial methods of operation embrace, first, partial or complete excision of the upper jaw; secondly, various osteo-plastic operations. Complete extirpation is accomplished in the same manner as for disease of the maxilla itself. Partial excision of the upper jaw for the removal of these tumors was first practiced by Maisonneuve in 1860. If the patient's mouth is large, no external incision is necessary. In other cases the upper lip on the affected side is divided from its free edge upward into the nostril. The external and anterior surfaces of the upper jaw are laid bare by division of the soft parts of the cheek. The mucous membrane of the hard palate is divided by the incision from behind forward in the median line, and the soft palate cut transversely from its attachment to the palate bone. A stout pair of straight edge bone forceps is now employed, one blade having been introduced into the nose and the other into the mouth. The alveolæ and hard palate are then divided, one blade of the forceps still remaining in the nose, and the other blade is applied to the external surface of the jaw, and a horizontal section is made of the latter beneath the malar tuberosity. Simple depression now suffices to remove the bony fragment which contains the palatine processes, the alveolar processes, and nearly the entire pterygoid processes. The subsequent steps of the operation consist in extirpating the polypus by one of the methods already mentioned.

In the opinion of Sands, neither the operation through the mouth, nor the osteo-plastic procedures, permit that satisfactory exposure of the base of the skull which is afforded either by partial or total resection of the superior maxilla; he gives his preference for partial excision of the upper jaw as the one calculated to favor complete removal of the tumor with the least practicable disfigurement.

CHAPTER XIII.

PAPILLOMATA —ANGIOMATA — ENCHONDROMATA— EXOSTOSES—GUMMATA— LYPOMATA.

PAPILLOMATA.—Papillomata are occasionally found in the nasal cavity. They are benign and do not differ from the formations of this variety of growth occurring in other parts of the body. They may fill entirely both cavities, and give rise to excessive and sometimes fœtid discharges. They may develop in any part of the nasal cavities. I have removed them from the most depending portion of the inferior turbinated bones posteriorly. For their removal we employ the snare, forceps, or cautery loop; but if situated in the anterior nares, the curette is perhaps the simplest and most effectual instrument for their extirpation. After removal, an application of nitrate of silver or a strong solution of per-chloride of iron, about two drachms to the ounce of water, should be used to destroy any of the fragments remaining. Removal is sometimes attended with free hæmorrhage.

Mr. H., aged 58, consulted me for nasal catarrh; he complained of an annoying discharge from left nostril, dropping from behind the palate, and obstructed nasal respiration; he had occasionally asthmatic attacks. A rhinoscopic examination revealed a growth about the size of a hazel-nut and attached to the posterior portion of the inferior turbinated bone, left side. I removed it without difficulty upon the first introduction of the snare through the anterior naris. It was found to be a papilloma attached by a short pedicle. The patient experienced permanent relief.

ANGIOMATA.—Angiomata, or vascular tumors, are rarely met with in the nasal cavities; they consist merely of blood vessels held together by a reticulum of connective tissue.

As far as I have been able to learn, with the exception of a case reported by Beauchêre, which is referred to by Virchow, one other case reported by Delavan (see appendix), and two occurring in my own practice, none others have been recorded.

Case 1.—Mr. F., aged 39, of Baltimore, consulted me at the suggestion of Dr. Van Bibber of that city. He gave the following history: Five years ago, he first observed the trouble in his nose; it began with an acrid discharge; sense of stuffiness, fullness or closure of the nostril, and the voice had assumed a nasal tone. At the time of consulting me, these symptoms had greatly increased, and the discharge was so excessive that almost constant recourse to the handkerchief was necessary.

An examination revealed a large, rounded mass, of a bright red color, soft and yielding to the touch, filling the entire cavity of the right nostril, and distinguishable externally by a well defined prominence. The rhinoscopic examination showed that the posterior nares were not involved. The tumor was sessile, and attached principally to the cartilaginous septum, and to a slight extent to the vomer.

Removal by means of the galvano-cautery was considered, but owing to the broad base, and the difficulty of successfully inclosing the whole mass in the loop, the plan was abandoned in favor of the knife. I then introduced and forced the index finger of my left hand along the floor of the nose and under the tumor as far as possible, using it as a guide for the knife ; no difficulty was experienced in separating the mass from its attachments.

During the operation very little blood was lost, but a few minutes later, after he had been conveyed to bed and reaction from the effects of the ether had begun, frightful hæmorrhage occurred, anteriorly and posteriorly; syncope ensued before it could be arrested, which was finally done, however, by means of the tampon and Monsell's solution of iron ; during the night he vomited several large basins of blood, each effort being followed by fainting, so great was the prostration from the loss of blood.

Under the influence of a generous diet, and a liberal allowance of Burgundy, he recovered sufficiently in a few weeks to return to his home in Baltimore. Eight years have elapsed since the operation, and there has been no return of the tumor; his voice has lost its nasal twang, and with relief from the local annoyance his general health has been greatly improved.

Prof. J. W. S. Arnold, who made a microscopical examination of the tumor, described it as a "vascular myxoma, containing more round than process cells."

Case 2.—Mrs. E. R., aged twenty-three, presented herself at my clinic at the Metropolitan Throat Hospital, August 20, 1881, complaining of having suffered during the last two months from frequent and severe hæmorrhages from her left nostril. It was noticed that she breathed with difficulty and with her mouth opened, and upon being questioned she stated that she had not been able to breathe with ease for over a month, *and that it* had become gradually worse, so that for the *last few weeks* she was compelled to breathe through *her mouth.* She was very weak and anæmic, and it was evident there had been a great drain upon her system. Her nose presented rather a strange appearance, the lower part being twice its natural size, and protruding about two lines out of its left anterior naris, and entirely filling it, was a tumor covered with dried and coagulated blood. Since she had only been aware of the presence of this tumor for the last four weeks, it must have been of very rapid growth. The cartilages of the left ala had been pushed outward from their normal position, and presented a protuberance the size of an English walnut. The septum, being subjected to the same pressure as the left ala, had been forced so far to the right that it nearly entirely occluded the right nostril. In fact there remained so little breathing space that the patient was compelled, as stated above, to resort to the baneful practice of mouth-breathing. An examination, made to ascertain the character and attachment of the growth, brought on quite a severe hæmorrhage, which was checked with difficulty. The tumor was found to be attached to the middle turbinated bone. A rhinoscopic examination showed that neither the vault of the pharynx nor posterior nares were involved. It had not the softness nor the compressibility of a mucoid polypus, but felt under the probe more firm and resisting. Portions of the growth that were brought into view were of a dark bluish color and very vascular. Several small erosions of the mucous membrane were to be seen upon its surface, and bled readily and freely when touched with the probe. As above stated, the growth was exceedingly vascular, and undoubtedly of a pulsating character.

On August 22d, the tumor, measuring an inch and a quarter in diameter, was removed with the snare. The operation was followed by a profuse hæmorrhage, almost producing syncope, and was checked only by tamponing the nostril. Fearing that there might be a return of the hæmorrhage, directions were given that the tampon should not be removed for twenty-four hours. In a few days the nose resumed its natural size and shape, and the patient was discharged from the hospital with orders to report from time to time. She was examined several times during the following two months, and, as there was no evidence of the *growth returning* and no traces of its remaining, she *was finally* discharged.

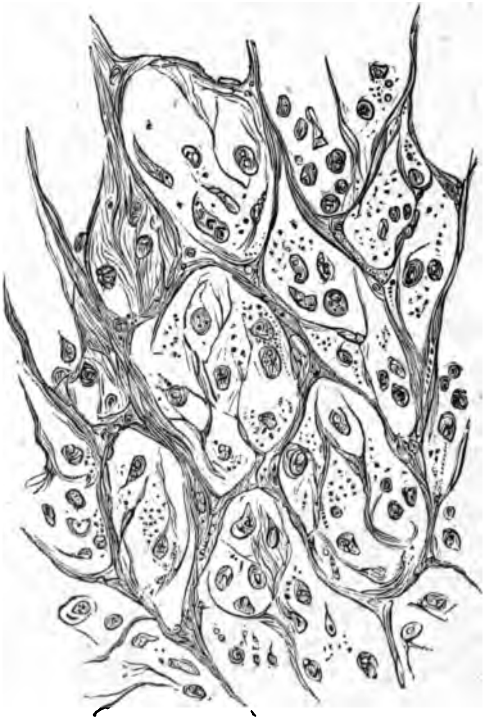

FIG. 48.
Myxoma multiplied 500.—HEITZMAN.

The tumor being examined by Dr. Heitzman under the microscope, presented some very interesting features. The main mass consists of a delicate reticulum of fibrous connective tissue with nuclei at the points of intersection. The meshes of this reticulum contain, besides delicate fibers, a homogeneous, jelly-like, basic substance, and imbedded in this a moderate quantity of globular protoplasmic bodies. The reticulum is fully supplied with capillary blood vessels.

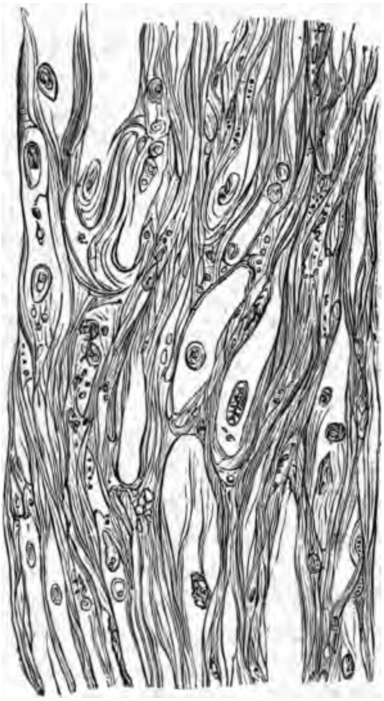

FIG. 49.
Myxo-Fibroma multiplied 500.—HEITZMAN.

This *structure* is characteristic of tumors of the *myxomatous variety.* Towards the periphery, the myxomatous portion of the tumor is abundantly infiltrated with globular protoplasmic bodies; especially is this the case in the neighborhood of the above-mentioned ulcerations, and is a feature indicating rapid growth.

Towards the base of the tumor large portions are marked by a higher degree of consistency, and are built up of a relatively coarse reticulum of connective tissue fibers, or bundles of fibers, inclosing comparatively small spaces of a homogeneous basic substance, and a small number of protoplasmic bodies. These

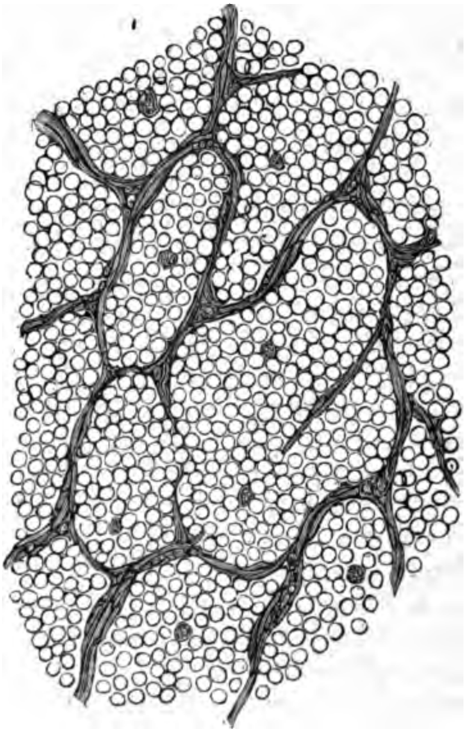

FIG. 50.

Cavernous Angioma multiplied 500.—HEITZMAN.

features are characteristic of those tumors termed myxo-fibroma, and represent the transition stage of the myxoma into fibroma. Large portions of the tumor exhibit a structure consisting of a frame of connective tissue inclosing large and regularly distributed spaces, which are filled with blood. This framework represents the walls of cavernous spaces, spaces like in structure to those of the cavernous bodies of the penis. The inner surface of the walls of these spaces are lined with an extremely delicate endothelium. This portion of the tumor must be classed under the head of angioma, and belongs to the cavernous variety.

Thus we see that the growth is of a very complicated structure, one portion being a myxoma, another a myxo-fibroma, and still another an angioma of the cavernous variety.

ENCHONDROMATA.—Enchondromata originate from bone and connective tissue, or from cartilage. We occasionally find them as outgrowths from the cartilaginous nasal septum. Woakes says that they are the most common affection of the septum which will confront the surgeon from an aural point of view. Delavan rereports an interesting case (Archiv. Laryngol, Vol. iii., No. 2) occuring in an infant eight months old, supposed to be the result of a severe blow upon the nose; it entirely occluded the left naris.

Treatment.—The multiple bladed knife or cutting burr and surgical engine employed in the manner described on page 101 for deflection of the septum will be found very effectual in these cases.

OSTEOMATA OR EXOSTOSES.—Osteomata or Exostoses are rarely met with in the nasal cavities: they can only be developed from bone or cartilage; they are *sometimes the* result of syphilis and more rarely from *the ossification* of the cartilage of the deflected septum.

I have encountered but two cases in my hospital and private practice, and Doctor Jarvis who is connected with the extensive clinic at Bellevue Hospital has met with but one or two cases.

An interesting case is reported (see appendix) which I operated upon successfully with the surgical engine and multiple cutting knife at the Metropolitan Throat Hospital.

GUMMATA.—Gummata are very rare, and when they occur are strong presumptive evidence of the tertiary form of syphilis. They probably precede in many instances the ulceration of that variety of chronic rhinitis which is known as Syphilitic Ozæna. But in the stage prior to the destruction of the mucous membrane their true nature is very liable to be overlooked, unless the tumor is of very large size, especially if there is an absence of syphilitic history or symptoms of syphilis in other parts of the body. In the event of their early recognition, under prompt and energetic treatment, resolution by absorption may be brought about before ulceration takes place. The patient should be given large and rapidly increasing doses of the iodide of potassium, beginning, say, with twenty-five grains at a dose, three times a day, and increasing the amount from ten to twenty grains during each succeeding twenty-four hours.

In the following interesting case early recognition of the true character of the disease undoubtedly saved the patient from a destructive and disagreeable ozæna. Mrs. ——— consulted me in the early part of the winter of 1883, for a painful affection of the nose. An examination of the anterior nares revealed a large globular mass in the left naris, completely filling the cavity and obstructing the entrance to the inferior meatus. She suffered greatly from the pain extending to the frontal sinus. She was extremely nervous and could not endure my touching the tumor with my probe with the view of satisfying myself as to its true character. At this time there was no other symptom of syphilis present, and even had this disease been suspected her social position would perhaps have forbidden strict inquiry into the facts. Thinking that probably it might prove a tumor which would necessitate surgical interference later, I determined to wait for further developments, in the meantime having the case under careful observation. She reported daily for examination, and no treatment was adopted but the application of a soothing spray. About ten days after she first consulted me, she complained one morning of a sore throat. When I first saw her there was no pharyngeal disturbance, but an examination at this time (ten days later) revealed considerable hyperæmia and decided swelling on the left side of the posterior wall of the pharynx involving the posterior column of the soft palate. Several days later, during which interval I had not seen her, an examination revealed a large ulcer about one inch in length and a half an inch in width upon the posterior wall of the pharynx, left side, and involving the posterior column of the soft palate. It was very deep, edges everted, and the excavation covered with a thick tenacious slough. There was no doubt in my mind but that I had a case of tertiary syphilis to deal with. She then informed me that she had every reason to believe that she had contracted disease from her husband some seven years before. She had had secondary skin troubles from her description of them. I at once prescribed the iodide of potassium, beginning with 25 grains at a dose, increasing rapidly until the amount reached was 80 grains at a dose, four times a day. In about ten days the tumor in the nasal cavity had wholly disappeared and healing of the pharyngeal ulcer had taken place. I have had the case under observation, and she has taken since that time—over twelve months—almost uninterruptedly the bin-iodide of mercury in small doses. There has been no recurrence of the symptoms. The iodide of potassium acted as promptly in this case in producing resolution of the tumor as it does in gummata in the larynx, of which I have had under treatment numerous cases.

BLOOD TUMORS OF THE SEPTUM.—After a severe blow upon the nose, extravasation of blood may take place between the mucous membrane and cartilage, forming quite a prominence and appearing as a large rounded mass, sometimes filling the entire cavity of the nares. They should not be confounded with the variety of growth or new formation described above as vascular myxoma. The history of the case, if a doubt arises, will enable one to decide without difficulty. Compression may be resorted to to favor absorption; but if too large for us reasonably to expect resolution by this method, then a free incision should be made before suppuration ensues.

CYSTOMATA.—True cysts are rarely found in the nasal cavities; in the few cases on record they developed in the post-nasal region. In appearance, when seen in the rhinoscopic mirror, they resemble very much the ordinary gelatinous polypus.

TREATMENT.—Removal by snare or polypus forceps; if thoroughly removed are not liable to recur.

The following interesting case occurred in the practice of [1] Professor Lefferts:

"I was recently consulted by a young lady who desired relief from the ordinary symptoms of a hypertrophic nasal catarrh, which she was supposed to have, and for which she had undergone various plans of treatment, both local and general, for a lengthened period of time.

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[1] *Phila. Med. News.*, Dec. 15, 1883.

"The main symptom, and the one of which she mostly complained, was complete obstruction of the nasal passage to the respiratory current. This condition had become progressively worse during the last year.

"An examination of the anterior nares by means of the nasal speculum and reflected light, showed nothing but the common appearances—hyperæmia and slight thickening of the mucous membrane—incident to an ordinary chronic catarrhal process (simple chronic rhinitis). The rhinoscopic mirror used in the examination of the posterior nares, a procedure not before attempted in her case, determined at once the cause, and, as I supposed, the nature of the obstruction to nasal respiration.

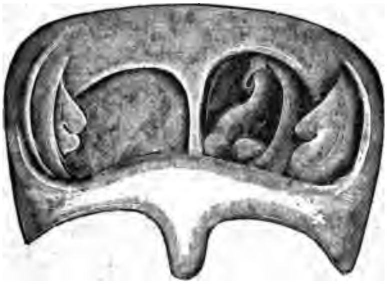

FIG. 51.

"A large tumor, smooth, more or less rounded, and of a grayish color, resembling precisely an ordinary *gelatinous polypus*, for which I at once mistook it, *fully occupied* and completely closed the left posterior naris, projected outwards into the free space of the upper pharynx, and lay in close apposition to the pharyngeal orifice of the left Eustachian tube. Its removal by means of the nasal polypus forceps was at once determined upon; this instrument, in my judgment, affording the quickest and surest method of extirpation.

"The first introduction of the forceps, their correct application to the growth being guided by means of a direct inspection through the posterior nares before their closure, succeeded in bringing away a large portion of the tumor."

TUMORS OF THE SOFT PALATE.—Tumors of the soft palate are not of frequent occurrence. If of large size they will give rise to the same subjective symptoms which we have in nasal or naso-pharyngeal tumors. The rhinoscope, aided by digital exploration, will enable us to differentiate when we are in doubt as to the seat of attachment. Two cases occurring in my practice are unusual and of extreme interest.

Case 1. *Adenoma of Soft Palate.*—Angelina T., a negro, aged thirty-five years, tall, and of rather spare habit, of previous good health, with no evidence of hereditary or acquired taint of constitution, was sent to me for treatment, by my friend, the late Dr. de Brémon, of this city.

History.—Six years ago she had an attack of diphtheria; one year later she first observed the growth in her mouth, which seemed to remain stationary for about three years, but a year ago it began to increase, and attained its present size about six months prior to the operation for its removal. At no time has she *suffered pain,* nor has there been enlargement of the *cervical lymphatic* glands; but, latterly, deglutition and articulation have been greatly interfered with. An examination discovered a large, oval, non-pedunculated tumor in the soft palate, the apex of which was directed downward and forward, resting upon the tongue and extending from a little to the right of the uvula to the space between the left anterior and posterior columns of the palate, and a few lines anterior to its posterior border.

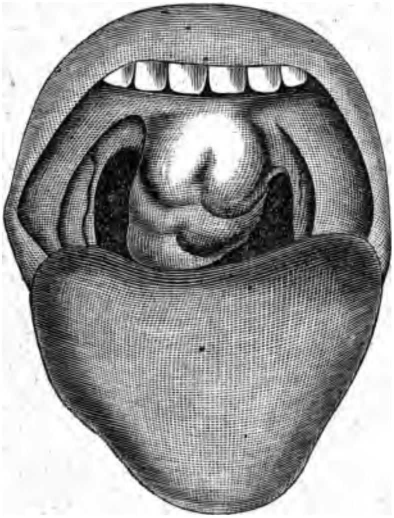

FIG. 52.

With the aid of the rhinoscope I discovered the uvula which previously I had thought was involved in the tumor. The posterior column of the palate was pushed upward and backward, presenting the appearance of attachments to the vault of the pharynx.

Upon making a digital exploration behind the soft palate, the firm, hard, rounded base of the tumor could be distinctly felt lying in its substance, and unattached to the base of the skull; this fact decided me upon operating through the mouth.

Operation.—Nélaton, in a case somewhat similar, employed successfully the electro-chemical method.

Rejecting the operation by electrolysis as tedious in performance, and doubtful in its results, I determined to try the galvano-cautery wire.

A battery of four large cells was used; bending the platinum wire to the proper angle, I endeavored to encircle the tumor at its base by passing the loop behind the soft palate. In the first attempt the wire slipped, and I succeeded in removing only about one-third of its inferior portion. Several subsequent efforts were made, but each time the wire broke upon making the connection.

As the patient was becoming rapidly exhausted from pain and fright, I resorted to the knife. Seizing the pendent portion of the tumor with a pair of forceps, gentle traction downward and forward was made. It was then dissected from its attachments by an incision commencing at the anterior column of the palate, on the left side, and carried backward between the tumor and the posterior border of the palate.

Hæmorrhage occurred from the wound several hours after the operation, but was readily controlled by the tampon and liq. ferri persulphatis; for a short period the liquids regurgitated through the nasal passages; the wound healed kindly, however, and at the expiration of ten days scarcely a trace of the operation was visible.

Examination of Tumor.—The tumor measured two and one-quarter inches in its long axis, and two and seven-eighths inches at its widest circumference. It was smooth, somewhat lobulated, of firm consistence, whitish color when cut into, with yellowish spots scattered over its surface. A microscopic examination showed a multitude of small cells, distinctly nucleated, mostly of an oval shape, and with here and there a few spindle-shaped ones, with long processes; fibrous tissue appears sparingly. The cells were mostly adhering together without intervening substance. Fat-cells occur in abundance, some of which are partly filled with cell-growths.

The following is taken from Dr. Delavan's report of my case to the New York Path. Society:

Case 2. Dermoid Tumor of the Soft Palate.—Patient aged twenty, Irish, single, domestic. Previous history good. No heredity. Stated that two weeks before operation she first noticed something wrong with the throat, and the trouble had grown rapidly worse. On examination, patient is a well developed healthy girl, with no signs whatever of any diathesis; mouth, tongue, soft palate (anteriorly) tonsils and pharynx normal, with the exception of a slight amount of pharyngeal catarrh, and the following extraordinary appearance: Upon the left side of the pharynx is a foreign body, which hangs downward, from behind the velum a distance of seven-eighths of an inch and extends from near the median line toward the left, nearly to the lateral wall of the pharynx. The surface of this body is pale, and no blood vessels are apparent upon it, in which it offers a striking contrast with the neighboring parts. The body is freely movable, and flattened in its antero-posterior diameter to such an extent, that, while touching the posterior wall of the pharynx it does not project anteriorly beyond the middle of the tonsil. Rhinoscopic examination demonstrates clearly that the body is a tumor, *springing by a pedicle* from the soft palate. Its attachment corresponds with a space located one-fourth of an inch to the left of the median line midway between the lower margin of the velum and the lower border of the left nasal fossa. Believing from the history of the case, that the growth was recent and likely to increase rapidly in size, and that from the position and size of its pedicle, its removal could be easily accomplished without much difficulty, Dr. Wagner decided to operate upon it at once. The operation consisted essentially in dragging the tumor downward into the pharynx as far as possible, and then dividing the pedicle with a knife. This apparently simple procedure was attended with unexpected difficulty, for, instead of yielding readily to the knife, the tumor proved to be so dense and resisting that great force was required to effect its separation. Copious hæmorrhage followed, but was speedily checked by ordinary methods. The portion of the tumor removed, upon careful examination and dissection, presented the following characteristics: it was an irregular ovoid mass, flattened from before backward, about seven-eighths of an inch broad, and from three-sixteenths to one-fourth of an inch in thickness. It was thickest at its margins, while its middle and anterior surface was slightly concave. Its surface was covered with an integument bearing no resemblance whatever to mucous membrane, and furnished with fine, but distinctly visible hairs. Beneath the integument was a layer of fat, and beneath the layer of fat, two plates of cartilage. Further dissection demonstrated the existence of three cartilaginous plates, two large and one smaller. These were curled outward at their margins, which tapered off to a thin and serrated edge. The plates were separated by fibrous tissues. In all its essentials the tumor presented an extraordinary analogue to the helix of a normal ear. The tumor was hardened in absolute alcohol, and microscopic sections made completely through its vertical and transverse diameters, and when stained with carmine and mounted in Canada balsam, gave under the microscope the following appearance. The tumor was covered with a true skin, complete, with one exception, in all its essentials, as follows: first, a delicate, but clearly marked layer of horny epithelium, covering a thick rete Malpighii, into which there extended a large number of simple papillæ; beneath this a corium, containing many hair follicles, which, in most instances, were provided with a delicate non-pigmented but otherwise perfect hair. Into the majority of hair follicles there opened a large sebaceous gland. Both the sebaceous glands and the hair-follicles were typical and very abundant. Beneath the integument was a thick layer of fat, in which were scattered small bundles of fibrous tissue. Then followed a tolerably dense layer of fibrous tissue which covered a thick plate of reticular elastic cartilage. This plate adjoined another similar plate, and between them was a thick mesh wall of fibrous tissue which contained many blood-vessels, and formed, in reality, the central part of the tumor.

The story of the patient as to the recent origin and growth of the tumor was evidently incorrect. Although never before observed, it was without doubt congenital.

I have frequently seen the patient during the past three years, the small portion of the pedicle remaining after the operation has undergone no change, it occasions no irritation whatever, the patient apparently being unaware of its presence, consequently no attempt at removal has been made. Had I diagnosticated or even suspected the true character of the tumor before operating, I would have removed the entire mass by buttonholing the soft palate.

MALIGNANT TUMORS.—Malignant tumors of the nasal cavities are rarely met with—the growths are not unfrequently of a compound character, partly sarcomatous or scirrhus—the naso-pharyngeal variety which throws prolongations into accessory cavities is sometimes encephaloid.

Epithelioma when it occurs has its origin in the external parts.

The age of the patient and the history of the tumor's progress and the microscopical examination of portions removed will enable us to establish a diagnosis in doubtful cases. In the few cases that have come under the observation of Durham he noticed that the soft palate was red and thick to the touch, instead of being pale and thin as is commonly the case when it is pressed down by a mucous or fibrous polypus.

Surgery is powerless in these cases and operations for removal generally aggravate the sufferings of the patient without accomplishing the saving of life.

CHAPTER XIV.

FOREIGN BODIES—CALCULI OR RHINOLITHES —PARASITES OR WORMS.

Foreign Bodies.—As a rule, children are the only patients brought to us with foreign bodies in the nasal passages. When we are called upon to examine a child of whom there is a history of a foreign body in the nose, the diagnosis is made for us, and we have only to devise means for its removal. Substances are sometimes forced up the nose by the child itself, but from fear of punishment it may not acquaint its parents of the fact. The substance will be allowed to remain perhaps until the child forgets its presence. Or as in some cases that have come to my knowledge, the substance has been forced into the nares of almost mere infants, by mischievous playmates, and its presence not been made known for years after its introduction. The substances found in the noses of children are buttons, pieces of sponge, or rags, cork, seed, cherry stones, beans, tinfoil, etc. The inferior meatus is usually the place of lodgment, the middle more rarely. In case there is no history of a foreign body having been introduced, thorough examination should be made. The nostrils should be dilated by means of a speculum, and a strong light thrown into the anterior nares. If the body is well forward in the meatus, and sufficiently large, it may be readily recognized. The only thing it may be confounded with is necrosed bone, but this would imply an ozænic condition, with the characteristic fœtid odor and impaired health, and the bone would most likely be found on both sides. Again, a foreign body is rarely so closely impacted in the meatus as not to impart a certain degree of motion when pressed upon by the nasal probe. Again, if a child who has no history is brought to us, and if from one nostril only, there is a purulent or sanguino-purulent discharge, and respiration through that side greatly impeded, with the general health good, you may suspect a foreign body. If upon introducing your probe, it comes into contact with a resisting body, which is slightly movable upon pressure, you may give as your opinion that there is a foreign body. But in the event of the body being sponge or rag, by reason of its yielding, the diagnosis will be rather more difficult to establish, and probably will not be determined upon.

The removal of foreign bodies from the nose does not require special skill. More will depend upon the means employed than upon individual knowledge or expertness. We are told that no force should be used, and that only careful and delicate manipulation should be resorted to. The nose is not so delicate an organ as the eye. A foreign body, such as a spiculum of steel or stone driven into the pupil of the eye requires skill and most careful manipulation for its removal, otherwise vision may be destroyed. But in the nose the greatest evil that can follow the employment of force is the laceration, more or less, of the mucous membrane covering the inferior turbinated bone, the septum, and the floor of the nostrils. Hæmorrhage cannot be serious nor alarming, and if any occur, we have it in our power to arrest it speedily and without difficulty. The nose is an organ that is constantly receiving a vast amount of punishment from accident, from surgery—

good or bad—and still its functions are rarely seriously impaired or interfered with. For the removal of foreign bodies I usually employ a pair of long and delicately made forceps, and slowly but carefully endeavor to get as much of the body within their grasp as will give me a purchase, and then by a quick jerk or pull endeavor to dislodge the substance: I seldom fail. The slight amount of bleeding which follows from the laceration of the mucous membrane I consider of no consequence. It has been proposed to employ the nasal douche. A stream of water passing up one nostril and coming out the other would bring with it, it is claimed, the foreign body. This treatment would answer admirably if the body is slightly impacted or if the patient is an adult or old enough to understand the importance of keeping quiet during the flow of water; but unfortunately, our patients with this trouble are usually very young, frequently mere infants, and in the struggling which would surely take place, water would flow into the Eustachian tubes and cause inflammation of the middle ear; hence I consider this treatment impracticable. Another method has been suggested, and that is, to blow through the

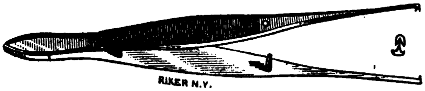

FIG. 53.

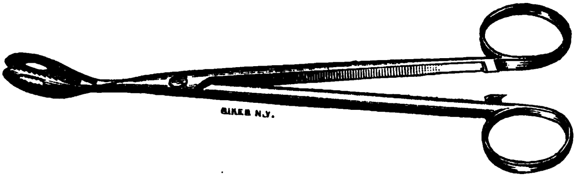

FIG. 54.

mouth of the child, keeping the free nostril closed by pressure upon it with the finger; the air from your mouth is expected to pass upward and behind the palate and out through the nostril, carrying with it the foreign body. The attempt to blow into a very young child's mouth would cause him to cry and to resist; this would at once cause retraction of the soft palate against the posterior wall of the pharynx, and the passing of air through the inferior meatus and out of the nose would be an impossibility.

The following cases are of interest from the fact that in neither of them was there an history, and the presence of the bodies was unsuspected:

Case 1.—A child aged three years was brought to me by its mother. It appeared in perfect health, no evidence of constitutional taint. The mother stated that for nearly two years there had been obstructed respiration with a discharge from the right nostril of a muco-purulent character, at times tinged with blood. The external nose was slightly tumified, and an examination of the right naris showed a mass or swelling in the inferior meatus. The surgeons who had seen the child, several in number, diagnosticated a nasal tumor, and recommended removal by operation; but as the child seemed otherwise in excellent health, they advised waiting several years until it should be physically more able to endure the ordeal. Its mother consulted me as to the advisability of delaying. I had the child firmly held, and then introducing the probe, I encountered a hard body which I could move slightly upon pressing against it with the instrument. This fact and that of the discharge being unilateral and the child otherwise in perfect health enabled me to diagnosticate a foreign body. I seized it with the forceps and removed it by a quick, forcible jerk. It proved to be a large seed covered with an incrustation and had probably been two years in the child's nose.

Case 2.—A boy eight years old was brought to me at my clinic at the Metropolitan Throat Hospital to receive treatment for catarrh of some years' standing. There was a discharge from the left nostril of a muco-sanguino-purulent character. Upon exploring with the probe I detected a firm, hard body in the inferior meatus of the left side. I seized it with the forceps and removed it without difficulty. It proved to be a flat horn button, such as is worn upon men's trowsers for suspenders. The boy declared positively that he had not inserted it and had no recollection of its having been introduced by any of his playmates. The button bore evidence from incrustation of having been a long time imbedded.

CALCULI OR RHINOLITHES.

Rhinolithes, when found in the nasal cavities, occur in the form of deposit or incrustation upon a foreign body which has served as a nucleus. True calculi, such as are found in the bladder, kidneys, the sub-lingual and parotid glands, never occur in the nasal cavities. Watson says that the hardened decomposed crusts in chronic ozæna may be incrusted with the carbonates and phosphates of lime, and they furnish the nearest approach, in his experience, to a true calculus. [1]Graefe considers the gouty dyscrasia favorable to their formation. In the section on foreign bodies I refer to a case of a large seed removed from the nose of a child, aged three years, covered completely with an incrustation. Certainly in so young a subject the gouty dyscrasia could not be regarded as a factor in the production of the calcareous deposition. I have never encountered a case which had not for its nucleus a foreign body of some kind. The symptoms are those of chronic rhinitis to some extent, although the discharge will be unilateral and probably mixed with blood and pus. An examination with the nasal probe will enable one to determine as to the true character of the trouble.

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[1] *Graefe.—Quoted* by Watson. Diseases of the Nose.

[1] Roe reports a very interesting case, in which the calculus when removed weighed forty grains, the nucleus being a small pledget of cotton. This writer thinks the most frequent cause is chronic inflammation of the nasal fossæ and the lachrymal gland, which may determine such an alteration in the secretion as to lead to calcareous deposition.

Treatment.—Removal should be decided upon as soon as the diagnosis has been made. If too large and too firmly imbedded in the meatus to be removed by means of forceps, the most expeditious way of accomplishing it would be to reduce it to powder by the employment of the cutting burr driven by the surgical engine; or the cutting trocar could without difficulty be made to perforate the body, and then by slight force with a pair of forceps the calculus could be fractured and the fragments removed.

PARASITES OR WORMS IN NASAL CAVITIES.

Flies, centipedes and worms sometimes accidentally find their way into the nose or the larvæ of insects may be introduced and undergo development.

During our civil war, it was not an uncommon occurrence under certain conditions of heat and moisture *favored by the* filth from neglecting to properly cleanse and dress suppurating wounds, for maggots to develop, but I can recall no instance in which the nasal cavities were invaded. In warm countries cases occur more frequently, especially if there is ulceration present to serve as a nidus for the deposit of larvæ. If the development should occur in the frontal sinuses the distress will be very great and occasion delirium and the cerebral symptoms.

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[1] *Archiv.* Laryngol. Vol. 1, No. 2.

The treatment consists in the injection of disinfectant sprays—a strong solution of carbolic acid and insufflations of irritating powders, tobacco or sanguinaria.

The following extraordinary case occurred in North Carolina where, I believe, the "screw worm" is frequently met with.

An unusual case of Screw Worms in the Nares.—Edward G. Cochran, M. D. College Clinic & Record, Phila. III., 245.

Was called to see a mulatto woman aged 32 years. She was said to be dying, having had several convulsions. Upon arrival she was only partly conscious. She complained of dull, heavy pain in her head, but especially in the frontal region and across the bridge of her nose. Temp. 103, pulse rapid and weak. Tonsils much swollen. She had suffered from chronic nasal catarrh for a long time with a discharge of bloody water. Diagnosis was made of acute inflammation of lining membrane of the nose, and frontal sinuses, extending down into pharynx. Next morning same symptoms continued, with slight increase in pulse rate, but no corresponding rise of temperature. She also presented some symptoms of brain affection. On the next day the symptoms were exaggerated, pulse 140-150, discharge from nose more profuse and very offensive. Several days previously I had noticed the odor of screw worms was of the same disagreeable nature as that from the nasal discharge of the patient. The following morning I found that a screw worm had been discharged from the patient's nose which had probably been loosened by the solution of chloral hydrate used. Making the patient hang her head over the edge of the bed, with her face turned upward, I poured a mixture of calomel and sweet oil into each nostril. In a few minutes fifty worms were expelled. The following day she was laughing and chatting without fever or pain, and only a little weakness remaining. She subsequently did well.

CHAPTER XV.

ABSCESS OF THE ANTRUM—DISEASES OF THE FRONTAL SINUSES—CONGENITAL MALFORMATION OF THE NOSE.

Abscess of the Antrum.—Among the numerous conditions which we are called upon to relieve as "nasal catarrh," we occasionally find abscess of the antrum.

The suppuration may be caused by a decayed molar tooth or inflammation of the alveolar processes or syphilitic periostitis within the cavity itself; it may result from an injury or severe blow, or wound of the face over the superior maxillary bone, or it may follow violent inflammatory action of the nose, mouth or pharynx.

It may occur at any age, even in newly-born children. Watson has seen two cases in very young children in whom he had reason to suppose the mischief was connected with injuries received during parturition.

Symptoms.—The condition may be recognized by pain under the orbit and a swelling or prominence externally over the region of the antrum, presenting sometimes a glazed or shiny appearance, a discharge of very offensive pus from the nostril of the affected side which, in the absence of pain and swelling will aid greatly in diagnosticating the cause of trouble. If the pus is confined the patient may have rigors and there will be danger of purulent infection. Should the accumulation be very large and the natural outlets remain occluded, displacement or expansion of the bones may occur and the pus find its way upward and backward under the orbital plates and cause protrusion of the eyeball. Prompt relief should be given in these cases to avoid serious complications.

Treatment.—If the abscess is allowed to open spontaneously, the pus will find an exit through the nose, the alveolar processes or more rarely through the cheek. As soon as the presence of pus is recognized one of the molar teeth should be removed. Malgaigne lays down the following as a rule—"When there is only one carious molar tooth, whichever it may be, it is the one that should be extracted." After the pus has escaped, the cavity should be carefully cleansed by means of a syringe with warm water to which is added a small amount of borax or carbolic acid. If the water does not pass through the cavity and out through the nasal entrance, communication should be established. This entrance is situated above the inferior turbinated bone almost in the center of the middle meatus; the sound or probe should be directed upward, backward and outward; about one and a quarter inches from the entrance of the nostril the orifice will be found; slight force may be required to rupture the mucous membrane which covers it; if the natural orifice cannot be found an artificial one may be made with the knife. The size of the normal orifice varies;[1] Durham in some cases has found it sufficient to admit of the point of his little finger. Having obtained a free passage, the patient should be instructed how to introduce the nozzle of a small syringe through the alveolar process opening, and then directed to inject several times a day, warm water to which has been added a few drops of acid carbolic.

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[1] *Durham.*—Holmes' System of Surgery, No. IV.

This treatment should be kept up until the inflammation subsides, and the discharge ceases. [1] Daly in his cases introduced a small gold canula through the alveolar process opening to act as a drainage tube, and prevent closing of the orifice, but if frequent use of the syringe is resorted to, this accident is not liable to occur.

In cases in which there is an history of syphilis, the proper constitutional remedies should be employed.

The following interesting case occurred in my practice several years ago. Mrs. C——, aged about 46, was referred to me by the late Dr. Lente for treatment for chronic nasal catarrh. She complained of intense pain at times, on the left side of her face below the orbit and near the ala of the nose, and a puffiness or swelling over the cavity of the antrum which varied in its extent. She was anæmic and very much broken down in health. An examination revealed the right naris normal, but on the left I found the parts slightly hyperæmic and the anterior aspect of the middle turbinate somewhat swollen; the posterior nares were healthy looking; from the left naris occasionally there was a most offensive and disgusting discharge, having the appearance of sloughing tissue; it was most profuse when lying down upon her right side. I suspected an accumulation of pus in the antrum, and upon examining her mouth found that the second molar tooth was very carious and sensitive upon pressure. I advised her to have a dentist extract the tooth; its removal was immediately followed by the escape of a large quantity of offensive pus. I used a syringe such as is employed by veterinary surgeons for giving hypodermic injections to horses.

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[1] *Daly.—Naso-*Antral Catarrh, and its treatment. Archiv. *Laryngol., Vol. III.,* No. 4.

The cavity was thoroughly cleansed of the accumulated pus, the water escaping through the left naris : this treatment was continued for several weeks, the patient using the syringe several times daily at her residence. I have seen her frequently since she was under my treatment and she informs me that she has had no recurrence of the abscess.

The cause in this case was undoubtedly the irritation produced by the carious tooth.

DISEASES OF THE FRONTAL SINUSES.—The frontal sinuses are hollow spaces in the frontal bone which communicate with the nares and are recognized externally by the prominences called the superciliary ridges. In the normal condition they contain only air.

Inflammation of the frontal sinuses, when not of traumatic origin, is usually the result of a chronic rhinitis, and especially of the syphilitic ulcerative variety or ozæna. Cases have come under my observation in which the careless use of the nasal douche produced intense pain with a feeling of tension and fullness across the brow.

If the vessel is given too great an elevation the stream will be thrown upward and backward which may cause the fluid to enter the sinuses. This, as well as the injection of irritating solutions into the nares, if continued, is liable to excite inflammatory action.

The presence of pus will be indicated by pain, with swelling of the external parts, comprising the eyelids, nose and brow, especially if preceded by rigors and febrile excitement.

Treatment.—The pus should be evacuated as soon as its presence has been decided upon. If there is a disposition on the part of the abscess to point at any particular spot, it should be selected as the proper place for entering the sinus. If not, the angle just beneath the eyebrow, between the supra-orbital notch and the root of the nose. The cutting trocar driven by means of the surgical engine will answer admirably in these cases; the entrance can be effected into the cavity in less time, with less suffering to the patient and with as much safety as is afforded by the hand trephine. The integument should first be divided with the knife and the trocar placed firmly against the bone. In boring, the direction given to the instrument should be backward, upward, and inward.

After the pus has escaped, the opening must be carefully closed in order to bring about perfect and rapid healing, otherwise an aërial fistula may be formed and an emphysematous condition of the forehead and nose will take place during coughing, sneezing, or effort of any kind which necessitates violent and rapid nasal respiration.

[1]Guthrie reports several interesting cases of recovery from gunshot wounds of the sinuses. He says: "The danger of injury to the frontal sinuses has been greatly exaggerated, and vanishes in a great degree when attention is paid to their structure." The following interesting case from his "Commentaries on Surgery," is an instance of recovery from a ball lodged in a sinus and removed by operation. "A soldier was wounded at the battle of Talavera by a ball, which struck him on the lower part of the right side of the forehead, fracturing the external wall of the frontal sinus. On examination, the ball could be felt lodged in the sinus,

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[1] *Guthrie.*—Commentaries on Surgery, pp. 373–374.

whence it was readily removed by enlarging the opening, and the man recovered without any bad symptoms."

In the battles referred to by Guthrie fought from fifty to seventy-five years ago, the small round ball was used for muskets ; it could enter and even pass through bone without causing splintering. The few cases of gunshot wound of the frontal sinuses reported from our late civil war resulted fatally, and this undoubtedly was owing to the extensive splintering or egg-shell fracture of the bones which conoidal balls never fail to produce.

Tumors embracing several of the varieties found in the anterior nares occasionally develop in these sinuses.

The symptoms are severe neuralgic pain across the brow, offensive discharge from nasal passages, tumefaction of the eyelids, increased prominence of the superciliary ridge, displacement of the eyeball and impaired vision.

Cysts.—Hydatid cysts are probably the most frequently met with ; in the early stage a diagnosis as to character will be difficult and perhaps uncertain until fluctuation is distinctly felt through the walls of the orbital plates.

Treatment.—Evacuating the contents by puncture, removing if possible a portion of the cyst wall and injecting tincture of iodine to cause adhesive inflammation.

Myxomata or Gelatinous Polypi are of very rare occurrence, but interesting cases are on record, for a report of which see appendix.

Fibromata are even more rare than the myxomata, but they have been recognized in these sinuses.

Treatment.—Removal of tumors should be accomplished before they attain a large size, if possible. After penetrating the sinus with the cutting trocar driven by the dental engine, the opening may be enlarged with the cutting bone forceps and the mass removed by the snare or forceps.

Osteomata—True osseous tumors have been known to develop from the anterior or posterior wall of these sinuses. If from the latter the direction of their growth will be inward towards the brain, in which case any attempt at removal would be very hazardous to the life of the patient. Surgical interference is not recommended by authorities.

CONGENITAL MALFORMATION OF THE NOSE.

Congenital malformations of the nose are of rare occurrence, but as many of them give rise to little, if any discomfort to the patient during life and as examinations of the parts after death are made with comparative infrequency, it is quite possible, as stated by [1] Mackenzie of Baltimore, that departures from its normal structure may be more common than is generally supposed. The deformity most frequently met with is bony occlusion of the posterior nares. This may occur from a lateral displacement of the bones, or a bony plate may form extending from the vault of the pharynx downward, covering the posterior orifices of the meati.

This is a very serious condition, as it interferes greatly with the act of sucking, and during sleep spasm of the glottis may occur.

[2] Ronaldson reports a case which resulted fatally

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[1] *Mackenzie, J. N.*—On a hitherto undescribed Malformation of the Naso-Pharynx. Archiv Laryngol., Vol. IV., No. 3.

[2] *Ronaldson.*—Note on a case of congenital closure of the *posterior nares.* Edin. M. O. 1880-1. XXVI., 1035.

shortly after birth. The posterior nares were found, upon examination, to be entirely closed by a dense, firm membrane. For a full account of this interesting case see appendix.

Several cases are on record of bony occlusion which were successfully overcome by operation.

The cutting trocar or burr driven by the surgical engine, is certainly the safest and most expeditious method of establishing a passage through to the pharynx. The following case of very rare malformation, a double septum, was reported by Prof. Lefferts. (Philadelphia *Medical News*, January, 1882).

"A young man, æt. 25, who had applied for treatment for a chronic catarrhal pharyngo-laryngitis. The posterior edge of the *septum narium*, from its point of mergence into the parts making up the vault of the pharynx to one half way in its course from the floor of the nares, was divided vertically into two distinct halves, inclosing between them a space large enough to contain perhaps the end of a lead pencil. This space was more or less triangular in shape, its base lying above, and was lined apparently with normal *mucous* membrane. Its depth was not ascertained,

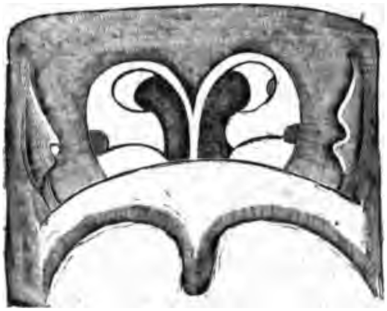

FIG. 55.
DOUBLE SEPTUM.—From a drawing by Prof. Lefferts.

but an anterior examination of the nasal passages disclosed nothing abnormal as to the configuration of the septum. There was no history of injury to the nose or skull. No symptoms were referable to the condition, and its presence was of course unknown to the patient."

CHAPTER XVI.

ANOSMIA.—NERVOUS PHENOMENA DUE TO NASAL AFFECTIONS.

ANOSMIA.—The function of smell may be only slightly impaired, or altogether lost. It may diminish gradually in its intensity, or total loss may occur suddenly.

Etiology—The causes are centric, or eccentric. We may have congenital anosmia due to absence of the olfactory nerve; the only nerve concerned in this function. [1]Rosenmueler, Cerutti, [2]Notta and Pressat, have reported cases in which the absence of the nerve was proved by post-mortem examination. Atrophic changes may take place in the nerve, and cause loss of smell. Notta reports three cases; this condition is not uncommon in the aged. According to the investigations of [3]Prevost, in old age the olfactory lobe loses its rosy hue, and becomes grayish and much smaller. According to [4]Erb, many cases of anosmia are of centric origin and are due to the arrest of intercranial conduction, or to inexcitability of the olfactory center. He also states that cases of anosmia which accompany aphasia and dextral hemiplegia, are always limited to the left nasal cavity. The anosmia of hysteria is of central origin, as well as that which occurs in the insane. It frequently results from traumatic causes, such as blows upon the head; or fracture of the bones of the base of the skull may produce a rupture of the olfactory nerves as they pass from the bulb through the holes in the ethmoid bone. Notta reports six cases. Nose bleeding would indicate this.

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[1] *Rosenmueler.* Ziemssen's Cyclopedia, p. 261.

[2] *Notta.* Recherces sur la perte de l'odorat. Arch. gén. de *Méd., 1880, pp.* 385, 467.

[3] *Prevost.* Ziemssen's Cyclopedia, p. 261.

[4] *Erb.* Ziemssen's Cyclopedia of Medicine, Vol. XI.

Eccentric Causes.—Loss of smell is not unfrequently a result of chronic rhinitis, whether of the hypertrophic or atrophic variety; also of ozæna in cases of extensive ulceration of the mucous membrane covering the turbinated bones; especially the superior.

Nasal tumors, polypi, and foreign bodies act as causes.

The tearing or laceration of the membrane in the removal of tumors or polypi by means of the forceps, has been known to destroy the sense of smell. Thudichum reports cases.

I have known loss of smell to be occasioned by the use of injections of strong astringents in the treatment of chronic rhinitis, and the long continued use of the nasal douche may likewise cause it. A powerful noxious odor inhaled suddenly and in large quantities, such as of sewer gas or illuminating gas, may produce loss of smell, just as a strong brilliant light may cause loss of sight, by paralyzing its physiological function. Dr. Notta reports a case of a person superintending the cleansing of a sewer, who was greatly inconvenienced by the bad odor which totally destroyed his sense of smell. The nerve may be rendered powerless for the recognition of special odors to which it has long been subjected. For example, an inspector of flour consulted me about a year ago; he stated that for twenty years, he had inspected flour by smell, and had acquired remarkable experience in detecting musty flour, and in grading the various brands. About three months before consulting me, his ability to distinguish between good and bad flour began to decline. After making several blunders, he decided to seek advice. I found that his sense of smell was perfect, except in regard to flour, the odor of which he could not recognize. I advised him to refrain from exercising his sense of smell in that special direction for six months.

The relation between the sense of smell and that of taste, is so intimate that the latter is generally either lost or greatly impaired in cases of anosmia. But I am inclined to believe that, as a rule, where the sense of taste is involved, the lesion may be looked for in changes at the roots of the nerve, and not in the filaments distributed to the mucous membrane covering the superior turbinated bones.

Treatment.—In those cases in which the loss of smell is due to either of the forms of chronic rhinitis, the presence of a tumor, or polypi, or a foreign body, the prognosis is favorable. With the removal of the cause the sense of smell will slowly, but almost surely, return. But when due to atrophic changes, or laceration of the olfactory filaments by fracture of the bones of the skull, little can be promised in the way of cure. The local application of electricity, the exercise of the function by frequently inhaling agents having a pronounced odor, such as camphor, iodoform, ammonia, etc., are the only means within our reach of affording relief. In a case, for instance, in which the sense has been lost through the sudden overpowering effect of a strong odor, electricity would be useful, and in the cases caused by chronic rhinitis, after the condition has been cured, it may be applied with good result.

NERVOUS PHENOMENA DUE TO NASAL AFFECTIONS. —*Within* a few years certain nervous phenomena the causes of which have hitherto been looked for in other organs, have been found to depend in many cases upon pathological affections of the nasal passages.

Asthma, for instance, is frequently reflex from nasal polypi. Voltolini in 1871 reported the first case on record of asthma from this cause. Fraenkel in 1881, read a paper before the Berlin Medical Society, upon the connection between asthma and nasal diseases. Haenisch, Thudichum and numerous others have reported cases. In the chapter upon chronic rhinitis, I referred to several cases of asthma occurring in my own practice which were permanently relieved by the removal of polypi.

Dr. C. A. Todd, of St. Louis, reports an interesting case of asthma from this cause; the patient was not cured by the removal of the polypi but was subsequently entirely relieved by the injection of tinct. ferri chlorid. into the tissue under the body of the sphenoid bone.

An hypertrophied condition of the mucous membrane covering the turbinated bones and septum, especially the inferior bones and the posterior portion of the septum, such as we frequently meet with in chronic rhinitis, may give rise to asthmatic attacks. The following case is illustrative of asthma from this cause:

A young man, aged 17 years, was brought to me in the autumn of 1880, to receive treatment for chronic catarrh and asthma. He stated that for five years he had suffered from inability to breathe through his nose; there was increase of secretion, pain extending to the frontal sinuses and violent attacks of difficult breathing, asthmatic in character, frequently preventing sleep and compelling him to sit up during the greater portion of the night. He was below the average size of boys of his age, and presented the characteristic stoop of the shoulders with the contracted thorax of confirmed asthmatics. An examination revealed extreme hyperæmia of the nasal mucous membrane, with thickening from hypertrophy of that covering the inferior turbinates, throughout their whole extent, as well as that of the septum producing almost perfect occlusion of the inferior meati; there was hyperæsthesia to such a degree that he could scarcely endure the introduction of a probe. The treatment consisted in the daily passing of metallic sounds, beginning with the smallest size; within four weeks I could carry freely one of the largest caliber through to the pharynx. The extreme sensitiveness of the mucous membrane disappeared after the first week—in addition to the treatment by dilatation, applications of the following solutions were made to the hypertrophied tissue throughout the entire length of the inferior meatus, by means of cotton on the holder.

℞. Zinci Iodidi
Zinci Chloridi āā . . . . . grs. v.
Aquæ . . . . ℥ i.
Ft. sol.
Sig. Apply three times a week, alternating with
℞ Plumbi Iodidi . . . . . grs. xv.
Aquæ . . . . ℥ i.
M.

With the restoration of nasal breathing and the relief of the engorged mucous membrane the attacks of asthma ceased. Four months later, a letter received from him informed me that he breathed freely through his nose, and suffered no longer from the asthmatic attacks.

Roe of Rochester has also reported cases of asthma *from this condition.*

Cough frequently has its origin in nasal affections;

polypi, tumors or foreign bodies sometimes produce obstinate, violent and almost constant cough. Rumbold of St. Louis reports an interesting case of a foreign body in the nose which gave rise to an obstinate cough.

In operations upon the nose, the introduction of instruments, probes, sounds, etc., frequently gives rise to violent paroxysms of coughing. Mackenzie of Baltimore observing this, instituted a series of experiments upon a number of persons by which he has been enabled to locate definitely what he terms the "sensitive area," upon the posterior end of the inferior turbinated bone and the portion of the septum immediately opposite, from which he draws the following conclusions:

(1) That in cases where reflex cough exists, these are the portions chiefly, if not solely, involved.

(2) That the act may be produced here at will by artificial stimulation of the parts invaded by the morbid process.

(3) That it may be dissipated by local applications to, or removal of, the membrane covering the diseased surface.

(4) That foreign bodies, such as pins, lodging in this area sometimes give rise to cough, which latter is not observed when they become impacted in other portions of the nose.

(5) That polypi give rise to reflex phenomena only when they arise from, or impinge upon, the sensitive portions of the area.

(6) That where complete atrophy of the turbinated structures exists, as, for example, in ozæna, reflex cough is not present, nor can it be induced by artificial stimulation.

Paroxyms of sneezing are of nervous origin, and *are probably* caused by an irritation of some kind *applied to* the "sensitive area" located by Mackenzie.

Hay fever may also be classed under this head. In all cases that have come under my observation, I have found a chronic inflammation of the mucous membrane lining the nasal cavities, especially that covering the turbinated bones, producing stenosis, and interfering with nasal respiration. At certain seasons of the year, usually about the middle of August, atmospheric conditions produce extreme hyperæsthesia, accompanied with all the distressing subjective symptoms of an attack of acute rhinitis. The proper time for treatment is not during the acute attack, but during the winter or early spring months, when the remedies suggested for the radical cure of chronic rhinitis with hypertrophy should be resorted to.

When not convenient for the patients to leave their homes for the mountains or a sea voyage, I have obtained good results from the following sedative mixture:

℞.	Sodii Bromidi	℥ i.
	Ext. Ergotæ Fluid.	ʒ i.
	Syr. Limonis	℥ ss.
	Aquæ Destill. . . . . . ad	ʒ iv.
	Ft. mist.	

Sig. Teaspoonful in water, three times daily.

Locally, sprays of Boracic Acid, grs. x to aq. Lauroceras ℥ i., followed by insufflations of

Zinci Oxid. . . .	1 part.
Pulv. Amyli. . . .	6 parts.

According to [1] Elsberg the following morbid conditions may be due to nasal affections: chorea, epilepsy, neuralgia, gastric disturbances, uterine disorders, pain and disordered function of the organs of sense, smell, taste, hearing, sight. [2] Bosworth has met with spasm of the glottis as reflex of nasal diseases invariably due to rhinitis atrophica, never to the hypertrophic form of the disease. The attacks were of the most alarming character, but did not occur as long as the nasal membrane was kept thoroughly moistened. A constant flow of watery fluid from the nose is undoubtedly due to nervous disorder. Several such cases I have referred to in the chapter under chronic rhinitis.

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[1] *Trans. Am. Laryng. Ass.*, 1883.

[2] *Ibid.*

CHAPTER XVII.

SMELL—HYGIENICALLY AND MEDICO-LEGALLY CONSIDERED.

Smell—Hygienically and Medico-Legally Considered.—As an aid in the detection, diagnosis and prevention of disease, the function of smell assumes an important *rôle* in the economy. In the lower order of animals, it is more acute than in the human family, and by several authorities it has been asserted, but not proved, that in savage tribes it is more acute than in civilized races. By education, exercise and frequent practice, it is capable of a very high degree of development in the majority of cases; especially, if the sense of vision and hearing are lost or greatly impaired.

As a rule, foul smells are unhealthy or unwholesome, but habit may reconcile one to the most noxious and disagreeable of odors—for instance, the workers in sewers, abattoirs or rendering works, and certain industrial establishments; plumbers and those engaged in removing offal from the old-fashioned wells or privies in our large towns and cities, before the introduction of water-closets into houses, were, as a class, not less healthy than other men; this, however, may be explained by the fact that these vocations compelled physical activity, and to a great extent in the open air, whereas the same amount of impure air, respired by one of sedentary habits, compelled to reside in a dwelling to which it had access, the most serious consequences might follow.

A nuisance has been defined as "any thing which interferes with the comfort, as well as that which injures the health directly."[1] I shall refer only to that variety of nuisance which is offensive, and recognizable through the function of smell.

Within the limits of or in the vicinity of most large cities there are always to be found certain industrial establishments which poison the air and pollute the water; and the proximity of which we are made aware of, chiefly through the sense of smell.

The disagreeable emanations from fat and bone establishments, abattoirs, petroleum and guano depots, glue factories, gas works, soap works where fat is extracted from slops, lime-kilns, breweries, oil refineries, the acid fumes from chemical works destroying vegetation, etc., while these establishments may not affect the general health of a community, those of a weak, delicate constitution, who reside in the vicinity, or who are compelled to pass and repass, will surely suffer.

Stables of large size in cities pollute the air in the neighborhood; the drainage of the average stable being defective, the liquid filth collects around the building, which is badly ventilated and damp, and the odor of ammonia from decomposed urine is ever present. There is a popular tradition that the air of stables is healthy, probably originating in the robust appearance generally of stable boys and grooms; but this is due to the active outdoor life, horseback riding or driving, and not to the vitiated air they breathe while in the stable, which on analysis has been shown to contain fragments of epithelium, hair, ovules, fungi, and odorous organic matter.

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[1] *Hygiene, Public* Health. Ziemssen's Cyclopedia.

During epidemics of erysipelas and diphtheria, cases are more numerous and more fatal in the vicinity of large stables than elsewhere; this fact was established by the investigations of a Medical Commission in New York about seventeen years ago. Stables in cities are an absolute necessity, but with proper attention to drainage and ventilation, the objectionable features enumerated may be almost if not entirely overcome. In military or other camps the function of smell will enable the medical officers to detect the nuisance in the form of noxious odors. Carburetted hydrogen and watery vapors are always found in excess in the air of malarial marshes, and sometimes sulphuretted hydrogen, which latter may be recognized by its pronounced odor, even if it exists in infinitesimal quantities. Camps become unhealthy from the accumulation in their vicinity of decomposing matters; if any such exist, the camp should always be made to the leeward of them; sinks especially should be located in this way, as fæcal matter is apt to accumulate in the atmosphere and cause diarrhœa, dysentery, cholera, and typhoid fever. In badly ventilated and overcrowded rooms—for instance, the tenement houses so numerous in large cities—in school-rooms, theaters, churches, and many places of amusement, the condition of the air is scarcely observed by the occupants, but one entering from the open air, at once perceives the pesty and sickening odor. Dr. Letherby, of London, found upon an analysis of the air of tenements, that it was deficient in due proportion of oxygen, contained three times the usual amount of carbonic acid, besides a quantity of aqueous *vapor and* albuminous matter.

Typhus and typhoid fever, scarlatina and diphtheria are constantly occurring in our tenement houses, and overcrowded badly ventilated schoolrooms, which might be prevented by heeding the timely warning given by the noxious odors. A New York evening paper gave a thrilling account of what it termed a "Hoboken Pest Hole," and stated, that a schoolhouse in Hoboken, in which for two years past "vapor reeking with deadly sewer-gas, and air tainted with the smell of decomposing matter from marshy meadows, have been constituent elements of the sanitary condition of the school. Teachers were prostrated in their class-rooms, and the ranks of the scholars decimated by typhoid fever." Typhus fever from similar causes was developed in a large boarding-school in New York city.

Sanitary inspectors, quarantine officers and schoolteachers would in no way lessen their efficiency by the cultivation of the sense of smell.

In medicine and surgery the function of smell may be made useful as an aid in diagnosis. Small-pox, for instance, has an odor readily recognized, as well as typhoid fever and diphtheria. Ozæna, in which there is osseous lesion or ulceration of the mucous membrane to any extent, emits an odor which is of itself diagnostic. The sputum of phthisis has a sweetish smell, and in diabetes mellitus the odor of sugar can be detected in the breath and urine. The odors of the breath will sometimes aid us in deciding whether coma is due to alcoholic poisoning or other causes. In suspected obstruction of the bowels the matter vomited, if stercoraceous, may be detected by its odor.

According to Isham, of Chicago, the habitual masturbator has a "liquor amnii sort of odor." A peculiar smell is also emitted by lying-in women. Formerly, when mercury was given so largely and freely, early ptyalism was recognized by the odor of the breath.

Much importance was at one time attached, by surgeons, to the peculiar mouse-like odor of favus and that of pus from sinuses, as indicating, by a peculiar sanious smell, whether or not bone was involved. According to Heller, certain colors absorb odors more readily than others. Troops wearing dark uniforms contracted typhus fever more readily than those wearing light colors; dark gowns in dissecting rooms retained the odor of the cadaver longer than those of lighter colors. It has been shown also that black is the most powerful absorbent, next blue, then, in decreasing intensity green, red, yellow, and lastly, white. The absorption of odors, he concludes, is regulated by laws which govern the absorption of light.

The sense of smell is capable of a high degree of development, and, as the science of medicine presents a wide field for experimentation, I have no doubt excellent results would follow. Numerous cases are on record of extraordinary delicacy of this sense, acquired by cultivation. The celebrated case of James Mitchell, born deaf, dumb and blind, who could recognize by smell, friends from strangers, as they entered his room. Humboldt states, that the Peruvian Indians, by smell, with their eyes blindfolded, can recognize the several races of men.

The North American Indian does not, as stated by Humboldt, follow the trail of the enemy he may be in pursuit of by the sense of smell, but by sight. I have frequently seen Indians trail and accompanied them on the march in pursuit of the enemy, and have never observed evidences of extraordinary acuteness of smell among them, nor do I think that the statement, that the sense of smell becomes more acute as we descend in the human scale, has any foundation in fact. On the other hand, many of the inferior animals have acuteness of smell to an extraordinary degree; the dog, for instance, especially the hunter—and it is impossible to approach an herd of buffaloes, antelopes or deer from the windward side. Mules employed in deep mines detect at once the presence of choke-damp, or fire-damp, and rats always flee before the explosion takes place. These creatures, that are regarded by most persons with loathing and disgust, are zealously protected from harm by the miners, who may at any moment, owe the preservation of life to their quick and sensitive smell, otherwise known as instinct.

In undertaking legal action against what is termed a nuisance, by reason of noxious odors emanating therefrom and thus affecting the health of those living in the vicinity, as well as those who are occasionally there, it is important to remember, that individuals may become reconciled to the most offensive effluvia, so that, as Chitty[1] states, "it will be found that the evidence of numerous witnesses of considerable credit, that they have experienced no unpleasant sensation, will endanger a verdict; whilst the contrary evidence of others, who only occasionally have passed near to the nuisance will clearly establish, that to them it was intolerable. In these cases if the nuisance be near to a highway along which all persons have a right to pass, affirmative evidence of one or two witnesses of credit, ought to have weight."

In England poisoning of the atmosphere by emanations from industrial establishments has been carried to a greater extent than in any other country, but for some time past, efforts have been made to lessen the evil by legislative enactment.

In France, even where there is no positive evidence of injurious effects, the owners are compelled to have the noxious vapors condensed or consumed. There are several other cases in which claims for damages can legally and justly be made; for instance, in accidents occurring upon railroads, steamboats, and other modes of conveyance, one may receive a blow upon the occiput or any other part of the head; there *may be no evidence of injury, perhaps, other than bleeding from the nose, yet total loss of smell ensues.*

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[1] Medical Jurisprudence.

In such cases the defense would have great difficulty in proving the claim fraudulent. If submitted to an expert, who, upon examination, discovered complete occlusion of the nares from tumors or polypi, or an exostosis or paralysis of the alæ, or excessive hypertrophy of the mucous membrane covering the turbinated bones, the fact might be established that anosmia existed before the accident. If it were generally known that total loss of smell may follow an injury as above described, I have no doubt that claims for damages in accident cases would be more frequent.

The inhaling of pungent odors to excite sneezing and to produce coryza cannot be regarded as a test of the ability of the party to smell.

A powerful noxious odor, such as sewer-gas, or illuminating gas, inhaled suddenly and in large quantities, may produce loss of smell, just as a strong, brilliant light may cause loss of sight.

Dr. Notta relates an interesting case of this character:

In these days of extensive street excavations, the frequent sudden explosion of underground steam-pipes, etc., a sewer or illuminating gas-main may burst, parties may be standing or passing directly over the place *of breakage*, and, as in Dr. Notta's case, total loss of *smell may* result. Those injured in this way could surely have a just claim for damages against the city or corporation for the loss of so important a sense as that of smell.

In cases of sudden and suspicious deaths the sense of smell may detect, if in the stomach, certain volatile poisons, such as prussic acid, oil of bitter almonds, savine oil, turpentine, ammonia, alcohol and chloroform. The peculiar smell of lying-in-women may lead to the detection of a miscarriage if an attempt at concealment is made.

The sense of smell may be made useful as a test for rape. At a recent trial for that crime in England, the medical man claimed that, on pushing back the foreskin of the penis of the accused, there was an odor perceptible peculiar to women.

It is claimed also that the insane have a peculiar and characteristic odor, but if this were so the legal profession would probably long ago have made use of it as an evidence of unsound mind in those accused of crime.

APPENDIX OF CASES.

LIST OF CASES.

CASE I.—Removal of a large Naso-pharyngeal Tumor with extensive attachments to the base of the skull; unexpected brain complication; death. Geo. F. Shrady, A.M., M.D. *Med. Record*, N. Y., 1882, xxii., 270.

CASE II.—Myxofibroma of the Nares. W. C. Jarvis, M.D. *N. Y. Medical Record*, 1882, xxii., 270.

CASE III.—Fibroid Polypus of the Nose, removed by the knife. Dr. Kempf. *Louisville Med. News*, 1879, vii., 65.

CASE IV.—A large number of Polypi (fibro-myxomas) obstructing both nostrils. M. F. Alcock Nixon. *Medical Press and Circular*, London, 1879, n. s., xxviii., 305.

CASE V.—Recurrent Fibroid Polypus of the Posterior Nares. T. A. McGraw, M.D. *Michigan Med. News*, ii., 26.

CASE VI.—Glandular Carcinoma of the Nasal Mucous Membrane; excision of the upper jaw, recovery. Dr. Macfie Campbell. *British Med. Journal*, 1880, i., 325.

CASE VII.—Catarrh, from a large Cystic Tumor—removal, cure. E. Fletcher Ingalls, M.D *Chicago Med. Review*, 1884, ix., No. V.

CASE VIII.—Removal of an entire Necrosed lateral mass of the Ethmoid and Inferior Turbinated Bones through the Nostril; recovery. Mr. Bellamy. *London Lancet*, 1879, i., 699.

CASE IX.—Cancrum Nasi. Mr. J. O'Brien Kaugh. *London Lancet*, 1883, i., 232.

CASE X.—A case of Polypi of the Frontal Sinuses, Antrum and Nasal Fossæ. (Levret. "Observations sur la cure de plusieurs Polypes," 235. Paris 1749.) Taken from Watson on Diseases of the Nose.

CASE XI.—Dr. Wuth's case of Polypi of the Frontal Sinuses. (Demarquay quoted by Watson—Diseases of the Nose.)

CASE XII.—Fibroid Tumor of Septum Nasi. By Geo. Buchanan. *Glasgow Med. Journal*, 1882, xvii., 221.

CASE XIII.—Excessive hæmorrhage from a slight operation upon the Septum Narium. Andrew H. Smith, M.D. *Arch. of Laryngology, 1884, vol. iv., No. 2.*

Case XIV.—Mr. Fleming's case of Bloody Tumor of the Septum. *Dublin Med. Journal*, iv., 17., from Watson on Diseases of the Nose.

Case XV.—Abscess of the Nasal Septum due to Syphilis. By Samuel Johnston, M.D. *Maryland Med. Journal*, vi., No. 3.

Case XVI.—Congenital Stenosis of right Nasal Fossa, with unilateral sweating. Prof. Whittaker. *Cincinnati Lancet and Clinic*, 1879, n. s., ii., 442.

Case XVII.—Bony Occlusion of both Posterior Nares; Perforation of the septum with the revolving curved trocar; successful. T. B. Wilkerson, M.D. *N. C. Med. Journal*, ix., 5.

Case XVIII.—A case of Congenital Closure of the Posterior Nares. T. R. Ronaldson, M. D. *Edinburgh Med. Journal*, 1880–1, xxvi., 1035.

Case XIX.—A case of Bony Closure of the Nostril; removal by the burr drill. O. D. Pomeroy, M.D. *New York Med. Record*, 1881, xix., 652.

Case XX. *a*—A hitherto Undescribed Lesion causing Epistaxis, with four cases. J. L. Little, M.D. *New York Hosp. Gazette*, 1879, vi., 5.

b—Ibid.

c—Ibid.

d—Ibid.

Case XXI. *a*—Nasal Diphtheria. Thomas Amory De Blois, M.D. *N. Y. Med. Journal*, xxxvii., 12.

b—Ibid.

Case XXII.—A case of supposed Nasal Calculus. R. D. Clark, M.D. *Albany Med. Annals*, 1883, iv., 34.

Case XXIII.—Foreign body in Posterior Nares. D. Bryson Delavan, M.D. *Archives of Laryngology*, 1880, vol. i., No. 1.

Case XXIV.—Maggots in the Nares. R. E. Prince, M.D. *Medical News*, Philadelphia, xli., 445.

Case I.—Removal of a large Naso-Pharyngeal tumor with extensive attachments to the base of the skull—unexpected brain complication. Death. By George F. Shrady, A.M., M. D., New York, *Medical Record*, Sept. 16, 1882.

Male patient, aged 14. Four years ago he began to suffer from symptoms of partial occlusion of the left nostril. A year subsequently a small gelatinous polypus attached to the upper margin of the left post-nasal meatus, was removed by means of the finger introduced into the fauces; the operation was followed by a very great amount of hæmorrhage. The patient returned to his home relieved from all his symptoms. A few months afterwards there were again evidences of occlusion of the left nostril, consequent upon the re-appearance of the growth. The growth slowly increased in size and was attended with occasional attacks of severe epistaxis until the patient was brought to me in April, 1882. At that time his countenance was considerably disfigured by a protrusion of the left cheek, exophthalmos of the left side, swollen and distended nostrils, and by the pouting and opened lips of a mouth-breather. The left cheek was found to contain in its substance a movable tumor, apparently attached to the anterior edge of the masseter muscle of that side. On opening the mouth the soft palate was seen to be greatly expanded and to be pressed forward almost to a vertical plane, by a growth behind. The summit of the pharynx was explored by the finger when a tumor, fibrous in character, was found occupying that region, occluding the left nasal opening posteriorly, extending across the nasal septum into the right posterior nares, and attached to the basilar process of the occipital bone and adjoining left side of the body of the sphenoid. Rhinosopic examination showed the tumor to be pinkish in color, smooth and velvety in appearance, more or less globular in shape and of pronounced vascularity. The hearing of the left ear was not markedly impaired, although it was evident that the mouth of the Eustachian tube of that side was closed by pressure of the growth. There were no signs of disturbance of vision nor derangement or impairment of the movements of the left eye. No brain symptoms had shown themselves at any time. The patient complained of a stuffy feeling in the nose and throat, and his mother said that he breathed with great difficulty when asleep, and snored very loudly. At times he would have fits of suffocation, apparently due to obstruction by the tumor. * * * After due deliberation, partial resection of the jaw as advised by Maisonneuve was determined upon with preliminary laryngotomy and tamponing the pharynx, and accordingly on May 27, 1882, the operation was performed. The patient was cautiously etherized, laryngotomy was performed, a gutta-percha tracheal tube of large size inserted, and the pharynx was tamponed with a sponge attached to a stout string. Anæsthesia was kept up by means of a funnel and india-rubber tube attached to the canula.

Ferguson's incision was made from the inner canthus of the left eye, alongside of nose, around left nostril and through the middle of upper lip. The flap was then rapidly dissected from the bone, when it was *discovered that* the tumor in the cheek was continuous *with the main* growth through an opening in the pos terior wall of the antrum. The lower half of the left upper jaw was then removed * * and the growth exposed was found to be attached to the basilar process of the occipital, the adjoining left portion of the body of the sphenoid and also to the adjacent temporal bone. From this point it extended itself in various directions. It filled the superior vaults of the nose and pharynx, closed up entirely the posterior nares of the left side and partly occupied that of the right side, straddling the post nasal septum. In a direction to the left it spread itself to a slight degree behind the left pterygoid process into the pterygoid fossa, and was continuous with the tumor in the cheek by a prolongation into the left spheno-palatine foramen. A portion of the posterior surface of the maxilla had been absorbed, and, through the opening this made, a lobe of the tumor had extended into the cavity of the antrum. The left inferior turbinated bone had been absorbed, the left nasal cavity was greatly expanded, and the septum was strongly deflected to the right of the median line. This irregularly-shaped tumor was altogether equal in size to an orange, and its extirpation was attended with unexpected difficulty * * During the operation the hæmorrhage, which was mostly venous, was very profuse. * * Early in the operation, and immediately after the extirpation of the upper jaw, the patient's pulse became profoundly impressed. The whole period of the operation was scarcely thirty minutes. At its completion it became apparent that the patient was in an extremely feeble condition. He soon passed into a state of collapse and died within an hour after the operation * * An examination was made twenty-four hours after death. The lungs contained considerable blood, as did also the stomach. This was partly *caused by the* accidental and temporary displacement of the sponge tampon during the operation, and partly by soakage through the sponge itself. All the other organs of the body were healthy, except the brain. To the under surface of the left middle lobe of the cerebrum there was found attached, by inflammatory adhesions, a fibrous tumor the size of a horse-chestnut. The under portion of this intra-cranial growth rested in the enlarged foramen lacerum medium of that side, and was evidently continuous with the naso-pharyngeal tumor, the separation from the latter made at the operation being in a plane with the base of the skull * * The floor of the cranial cavity and vicinity was found to have escaped injury, except at the foramen lacerum medium, which was enlarged by absorption of its bony margins. The pneumogastric nerve and the larger vessels of the throat were also uninjured. The basilar process of the occipital was very much thinned by absorption, readily yielded to pressure of the finger, but showed no sign of injury upon its intra-cranial surface. The cavity of the orbit was not encroached upon by the growth. The exophthalmos was partly the result of pressure upward from the portion of the tumor in the antrum and partly from a crowding of the growth into the spheno-maxillary fossa. The tumor was a fibro-sarcoma.

Case II.—Myxo-fibroma of the Nares. W. C. Jarvis, M.D. *Medical Record*, N. Y., 1882, xxii., 270.

The patient, a gentleman 27 years of age. Anterior rhinoscopy shows the nostril to be stenosed by gelatinous polypi. The posterior nares was found to be obstructed by a large irregular growth, the posterior margins of which rested on the soft palate. The *upper border* encroached upon the vault of the pharynx, extending beyond the pharyngeal tonsil. The entrance to the left Eustachian tube was concealed by the lateral margin of the tumor, the posterior margin of the right Eustachian eminence was visible. The growth, as reflected in the rhinoscopic mirror, was of a light pinkish hue. It had a cartilaginous feel, and gave a harsh, graty sensation, when scraped with the finger-nail. The growth extended forward into the left anterior nares, where it could be distinctly seen and seized. Pressure upon the anterior prolongation of the polypus produced a corresponding disturbance of its posterior portion. Immediate removal was recommended, and the operation was performed by means of Jarvis's wire écraseur. No anæsthetic was used. A piece of piano wire, No. 5, was carried through the anterior nares, sheathed in the canula, and projected around the growth. More than *five hours* were occupied in making gradual traction, the instrument bending like a bow under the strain to which it was subjected, and pulsating like an artery.

Just before complete excision was reached, the wire snapped with a distinct report, having been cut by the sharp edges of the steel point screwed to the écraseur's canula.

No hæmorrhage occurred. An attempt was made to draw the excised portion from the slight remaining attachment to the mass, but, as considerable force was required, it was thought best to desist, for fear of starting a hæmorrhage, and the tissue was allowed to slough off. The patient returned several days after the first sitting, the portion first excised having disappeared, when a large wire loop was carried into the mouth through the naso-pharynx, and made to encircle the base of the growth.

Three hours and a half were occupied in making slow traction, at the end of which time the polypus was removed, one portion of which was mucoid in appearance and very vascular, being covered with large vessels, and the other very dense. The only pain complained of, and then only during the second operation, was a severe toothache. Not a drop of blood trickled from the nose into the pharynx. The large sphacelated spot upon the surface of the mass indicated where nearly one-half of the growth sloughed off after the incomplete section at the first operation. The nose was also cleared of the gelatinous polypi. The division of the tumor through its densest portion, without pain and hæmorrhage, demonstrated a safe and easy method for removing large nasal fibroid tumors, piecemeal, without resorting to the more formidable surgical operations.

Case III.—Fibroid Polypus of Nose, Removed by the Knife. By Dr. Kempf, *Louisville Medical News*, 1879, vii., 65.

Mrs. S., aged 50, seen first in April, 1878, complained of violent headache, which increased toward evening, with sense of fullness and weight in nostrils. Three months previously she was attacked with a violent headache, which commenced in the orbital regions and passed backward over the cranium; tonsillitis and erysipelas of the face. Examination of the nose revealed dry mucous membrane, with crusts, thought to be beginning of ozæna. In September following, patient complained of a violent headache, difficulty in breathing, impairment of the sense of smell and a sanious discharge from the nose. The left eye was bulged forward and to the left, and the tears trickled down the left cheek. The left nostril was found to be entirely blocked-up by a growth, giving the patient the frog-face appearance. Unsuccessful attempts at removal by means of forceps were made, but were discontinued, hæmorrhage being excessive. On October 5th, chloroform was administered, the posterior nares plugged, and a crucial incision was made over the left side of bridge of the nose, flaps were dissected back, periosteum was scraped from the nasal bones, and the bones were lifted out with an elevator. The finger was then inserted and tumor pulled out. The tumor was a fibroid polyp, size of goose egg, containing in its center the bones forming the septum of the nose, which it had encircled.

Six months later the patient was all right, there being no recurrence of the symptoms.

Case IV.—A Large Number of Polypi (Fibro-Myxomas) Obstructing Both Nostrils. By Mr. F. Alcock Nixon, *Medical Press and Circular*, London, 1879, N. S., Vol. xxviii, p. 305.

J. D., æt. 22, female, showed symptoms of nasal polypi, which increased, occasioning obstruction of nasal respiration, watering eyes, etc. On examination, a puffiness was noticed at each inner canthus, especially the right, and the tears flowed. Symptoms due to pressure on nasal duct, which disappeared on removal of the polypi. Respiration almost altogether oral; tumors of a white starch-like appearance presented themselves at either nostril, and occasionally they came down in damp weather; voice had acquired nasal tone, and face had acquired the frog-like appearance. The tumors grew principally from the inferior and middle turbinated bones, some small ones from the roof; none from the septum. Tannin proved of no use. They were removed from time to time by forceps, snare, and scraping; the number of larger ones being sixteen in all. They proved to be myxomas, with a fine fibrous stroma; the epithelium on their surface was ciliated; the fibrous stroma in some instances was found to be directly continuous with the periosteum of the bone; a fact which shows that the removal of a portion of bone with polypus is advantageous and tends to prevent a recurrence. Cured.

Case V.—Fibroid Polypus of the Posterior Nares. T. A. McGraw, M. D., *Mich. Med. News*, vol. ii. 26.

Frank J., age 15, never complained of any serious difficulty in breathing, but has noticed that each year he has been obliged to breathe more and more through his mouth, causing excessive snoring at night, the trouble dating back to an attack of diphtheria, eight years ago. In September, 1878, a tumor of posterior nares was diagnosed, and on November 1, 1878, it was removed by the galvano-cautery. The tumor proved to be a fibroid polyp the size of a large hen's egg. For over three months it has been entirely free from any disturbance, but about February 1, 1879, he contracted a slight cold, since which time he has felt some obstruction in breathing. To-day, March 5, 1879, the tumor is the size of a walnut, but the attachments at the base are much more extensive. It extends forward into the nares, involving the roof of the nares and the vomer, and backward upon the base of the skull. Tumor was removed by means of gouge, it being brought away in small pieces, and the base of the tumor was then cauterized.

Case VI.—Glandular Carcinoma of the Nasal Mucous Membrane; Excision of the Upper Jaw—Recovery. Dr. Macfie Campbell. *British Medical Journal*, 1880, vol. i., p. 325.

David J., aged 54, sailor, was admitted to Northern Hospital, Liverpool, October 1, 1878. Three years before he fell a considerable distance on his face, severely injuring his right eye, of which vision was entirely lost. Since then there has been a gradually increasing swelling of the right side of the nose, with a constant, sometimes profuse, sero-sanious fetid discharge from the right nostril. The swelling of the nose has been increasing rapidly lately. On admission, there was much enlargement of the right side of the nose and cheek. Over the malar bone suppuration had commenced. The skin was thick and gave way, discharging thick pus. There was no affection of the glands; but he was in a low state of health, and in constant pain. The right nostril was completely blocked by the growth, and the septum was pushed to the left. In the mouth, the tumor slightly encroached on the middle line, and extended back to the soft palate. Operation October 17, 1878. Fergusson's incision was followed from the center of the lip to the outer margin of the orbit, and the flap turned downward. The superior maxillary bone was removed with the orbital plate, the palate bone, and part of the malar bone. The tumor had no adhesions to the septum nasi or to the soft palate. The ulcerated portion of the skin under the orbit was excised, and the thermo-cautery was used when there was oozing or any suspicious tissue was seen. The whole line of the incision was sutured. Six months afterward there was no return of the disease, but there was considerable retraction of the skin of the cheek. His speech and swallowing powers had been perfectly restored by a false palate and upper jaw. The tumor was examined, and was found to be a form of growth of great rarity. It is described by Billroth as a glandular carcinoma of the nasal mucous membrane and is said by him not to be likely to recur.

Case VII.—Catarrh from a Large Cystic Tumor. Removed—Cure. E. Fletcher Ingalls, M. D., Chicago, Ill. *The Medical Review*, Chicago. Vol. ix.—No. v., Feb., 1884.

Male patient, had suffered from catarrh for 10 years, and had been especially troubled during last six months. He complained of difficulty of breathing, obstruction to left nasal passage, being able to inhale by considerable exertion, but unable to exhale at all through that side. Hearing not as acute on that side as on the other. Examination of anterior nares was negative. Examination of naso-pharynx by means of a rhinoscope revealed a large, smooth, grayish-white tumor, completely occluding the posterior orifice of the left naris and filling two-thirds of the naso-pharyngeal space. The tumor evidently sprang from the lateral wall of the pharynx in the region of the fossa of Rosenmüller. Tumor was removed by means of a Jarvis snare. Large size wire. Tumor measured $1\frac{3}{8}$ by $1\frac{1}{8}$ inches in the largest dimensions, and $\frac{3}{4}$ of an inch thick in its thickest portion. It was of semi-solid consistency and of a flattened pyriform shape. Microscopic examination proved it to be a mucous cyst. The growth was so completely removed that no subsequent treatment was deemed necessary, and the catarrh *was cured.*

Case VIII.—Removal of entire Necrosed lateral mass of the Ethmoid and Inferior Turbinated Bones through the Nostril.—Recovery. By Mr. Bellamy. *London Lancet*, 1874, Vol. i., p. 699.

A. T., female, aged 21. Strumous history. Has had symptoms of strumous ozæna for three years. Her nostril has been completely stopped up. The necrosis has probably been complete for about two months. There was great deformity of right side of nose; could not make out the extent of the necrosis; it was found, however, under ether, that the disease did not extend to the palatine plate, and it was determined to remove the mass through the nostril. This was done piecemeal. The patient had no bad symptoms and rapidly recovered. The nose quickly regained its original proportions and shape, and voice was much improved.

Case IX.—Cancrum Nasi. By J. O'Brien Kaugh. *London Lancet.* 1883, Vol. i., p. 232.

Patrick D., aged 5 years. Had measles in May. He became worse, and a discharge took place from his nose. In the first week in October, the left side of the face began to swell and become inflamed. On the 8th, a little hole formed on the side of the nose; on the 9th, the hole was as big as a bean, and on the 10th, there was a wound which had destroyed the left side of the nose, and was threatening to extend to the inner canthus of the eye. The left ala and the soft tissues over the left nasal bone had ulcerated away. The cavity of the nose was exposed, and the destructive process was extending to the septum and the left turbinated bones and the floor. There was a black slough along the margin of the wound, and around this there was a red, angry and indurated zone. The left eye was injected, and the tears flowed from it. The parotid was a little tender, but the submaxillary glands were unaffected. The patient's condition was deplorable, emaciated, exhausted, and suffered from much pain. Pulse, weak and frequent: temp., $103\frac{6}{10}$°. Diarrhœa, with dark, fetid stools. In a few days it left the nasal bones necrosed and were removed: the cartilaginous septum and turbinated bones were destroyed, though the vomer remained unhurt. The alveolar processes also became eaten away, and showed two of the second teeth in their beds. For twelve days patient's condition was precarious. There was a good deal of fever, but daily there was slight improvement. At first the wound was dressed every few hours, and iodoform dusted upon it. Quinine and port wine with plenty of milk were given, and three grains of Dover's powder every four hours. In the third week marked improvement set in. The child was always hungry; gained flesh; had no pain. The wound became pink and the edges soft, and a pellicle began to form.

Dec. 14th.—The patient has excellent spirits and has grown fat; but there is an unsightly hole in the side of the nose and the eye is displaced slightly downward.

Case X.—A Case of Polypi of the Frontal Sinuses, Antrum and Nasal Fossæ. From Watson on Diseases of the Nose. *Levret; Observations sur la Cure de plusieurs Polypes*, p. 235. Paris, 1749.

In 1725, there died in Paris a lad of 17 or 18 years of age, who, consequent upon small-pox, and for the space of three years, had been affected with polypi. There were seven of them altogether; in the nose, throat, maxillary and frontal sinuses. His appearance was hideous; his face enormously enlarged; his nose spread out to the usual width of the malar bones; and the upper maxillary bones greatly dilated. He had a very considerable protuberance at the root of the nose; his eyes were almost entirely protruded from the orbits; the distance between them was at least twice the natural distance; and the tears ran over the cheeks mixed with pus from two lachrymal fistulæ. The palate was so much depressed that it lay upon the tongue; the lower jaw was not changed in size or form, but it was continually depressed, so that the saliva flowed uninterruptedly. At the entrance to the nostrils, two polypi were seen, which completely filled these cavities, as was proved by introducing a flexible probe, which could be passed around each of the polypi without meeting with any obstacle.

On dissection, the one superior maxillary bone was found to be at its middle as thin as the skin of an onion, while the other had already given way so as to bring into view the thin and polished membrane enveloping a polypus about two inches in diameter, reddish and very elastic, loose at all points except toward the nostril, where it was attached by a slender pedicle. The two frontal sinuses were converted into a single cavity, occupied by two polypi, which, united, might have equaled the bulk of the one occupying the antrum. Each of them was attached by a slender pedicle, close to the excretory passages from the sinuses. The lining membrane of these cavities was thickened. The orbits were found to be diminished in size by the intrusion of the polypi; the eyeballs consequently displaced, the os unguis completely separated from the other bones of the orbits and so pressed upon as to become convex instead of con*cave toward* the orbital cavities; and the bones of the nose separated from each other to the extent of several lines.

Case XI.—Dr. Wuth's Case of Polypi of the Frontal Sinuses. (Demarquay, quoted by Watson, Diseases of the Nose).

A little boy, aged ten years, whose left eye had been diseased for nine years, was placed under the care of Dr. Wuth. The eye was completely displaced outside the orbital cavity in such a manner that it was on a level with the ridge of the nose.

It was so prominent on the malar region that, looked at in front, it hid completely the side of the face. The displacement downward was such as to place the eye in the same line with the tip of the nose. The eyelids during the last three years had covered less and less of the eye, and in fact they protected so little of it that the cornea and the sclerotic, for a space of three lines all around, were completely bare. A large and deep ulcer of the cornea threatened speedily to bring about the destruction of the eye. The frontal bone and the bones of the nose made a considerable projection in front. The eye had by degrees left its place, as the orbit was made narrower by the compression of the bones which constitute it. The left side of the nose formed, with the ridge of that organ, a plain and level surface. The finger introduced into the left nostril was stopped by a resisting obstacle. The skin was stretched, the left eyebrow, widely separated from the right, was drawn down. This part of the integument was thickened and rough to the touch; below the external portion of the eyebrow there was a small opening, pressure over which caused a whitish mucus to exude. Dr. Wuth, convinced of the existence of a large polypus in the frontal sinus, proceeded to extract it in the following manner: He first made through the soft parts, commencing at the root of the nose, a vertical incision two inches long; secondly, another incision at right angles to this one was directed over the eyelid; thirdly, he dissected off the triangular flap thus formed, so as to be able to apply the trephine to the sinus. There was visible then toward the middle of the superciliary arch, a small opening which indicated the source of the fluid we have mentioned. The enormous dilatation of the sinus made it necessary that two openings should be formed with aid of a small trephine. An immense number of polypi then projected out; these were removed; the cavity where they had existed would contain three hen's eggs. The parts took a year to heal; the frontal sinus shrank in all directions, and the eye was partly restored to its proper position in the orbit. The ulcer of the cornea healed quickly; so early as the first night after the operation the patient slept as he had not done before for many years, and his health henceforward rapidly improved.

Case XII.—Fibroid Tumor of Septum Nasi. By George Buchanan. *Glasgow Med. Journal*, 1882, xvii., 211.

J. S., aged 21, Jan. 12, 1882. Growing from the nasi on each side was a firm, reddish, elastic swelling projecting down in front so as just to appear outside the alæ nasi, while its limits behind could not be ascertained. The swelling affected the whole cartilage uniformly, so as nearly to obstruct the passage on each side. It was slightly painful on pressure. There was slight purulent discharge from right nostril. The nose was much broadened. The commencement of the growth dated from two months ago, when he received a severe blow on the nose, causing it to bleed very freely. From that time he began to feel as if the nasal passages were swollen, and in a week or so after the injury slight purulent discharge appeared from the right nostril. There had been no pain during its growth, but the presence of the swelling gave him slight discomfort and a feeling of tenseness when he assumed the sitting posture. Breathing through the nostrils was somewhat impeded. On Jan. 14, the tumor was removed. The columna was divided at its base and turned up, and then the septum divided from its attachments above and below—hæmorrhage very severe. To the parts thus separated the vulsellum was applied, and the whole twisted from its posterior attachments. On account of the hæmorrhage, the columna was not fixed until ten hours later, and four days after the patient was dismissed, the wound having united by first intention. The tumor mass was oblong, two inches long, rather more than one inch broad, and a half an inch thick. On either side it was covered with mucous membrane, and presented traces of a mesian septum at its posterior part. Through an opening on one side a probe passes into the center, when on section there is disclosed a ragged cavity, quadrilateral in shape and walled in by firm tumor tissue. Microscopical examination showed it to consist of well-defined fibrous tissue, with here and there clumps of round cells in close relation to blood-vessels, and in all probability inflammatory.

Case XIII.—Excessive Hæmorrhage from a Slight Operation upon the Septum Narium. By Andrew H. Smith, M.D., New York. (*Archiv. of Laryngol.*, 1883, Vol. 4, No. 2.)

E. M., aged about sixty-three, presented himself at the hospital clinic in November, 1882, with obstruction of the left nostril, occasioned in part by a sharp horizontal ridge projecting from the cartilaginous portion of the septum. The apex of this ridge was removed with the bistoury, leaving a cut surface about four lines long by less than a line and a half in breadth.

The operation was accompanied by a profuse flow of florid blood, the stream as it left the nostril being as large as the shank of a laryngeal mirror.

This continued for some minutes without any abatement, when it was arrested by pressing cotton loaded with dry tannin upon the bleeding surface.

During the following night, however, the hæmorrhage recommenced and a large amount of blood was lost before medical aid could be procured. It became necessary to plug the nostril both in front and from behind, which was very skillfully done by Dr. W. H. Henry, residing in the neighborhood of the patient. The plug being removed forty-eight hours later, the bleeding recurred soon after to such an extent as to take the patient completely off his feet, and to compel him to keep his bed for several days.

The nostril was plugged a second time, but the following day a considerable bleeding occurred notwithstanding, the blood forcing its way beside the plug, but this was checked by injecting persulphate of iron.

When I saw the patient, six days after the operation, his lips were bloodless, and his face had the tallowy appearance indicative of severe hæmorrhage.

That so much blood should be lost from so small a surface, would indicate that a vessel of considerable size must have traversed the ridge, reaching nearly to the crest—a very unusual circumstance. Section of the quasi erectile tissue covering the turbinated bones *is expected to* be attended by considerable bleeding, but the cartilage of the septum is ordinarily but sparingly supplied with vessels.

Case XIV.—Mr. Fleming's Case of Bloody Tumor of the Septum. (*Dublin Medical Journal*, Vol. iv., p. 17.) From Watson on Diseases of the Nose.

A gentleman, aged 25 years, in hunting, when riding over a fence, was struck by the horse's head on the nose. At the moment there was considerable hæmorrhage from the nostrils, which soon ceased, and feeling little uneasiness, he continued the day's sport. Towards evening and during the night a most distressing sensation of fullness and stuffing came on, which gradually increased, so as to entirely obstruct the nostrils. I was called to see him the following day; the outer parietes of the nose were generally swollen, slightly red, a little tender on pressure, but free from any appreciable contusion of the integuments.

On throwing back the head, and gently pressing the tip of the nose, each opening of the nostrils presented a tumor, tense, shining, and of a dark purple color, nearly filling its caliber; each tumor could be distinctly traced along its outer side with a probe, passing insensibly by a broad base upward and backward towards the septum; this appeared to form a partition between them, although a communication was suspected from the effects produced by the alternate pressure of the finger passed into either nostril, for by this means the tumor on the opposite side was fuller and more prominent. By the same manipulation, fluid was clearly ascertained to be present. From the extreme local suffering that was experienced, I felt myself justified in making an opening, and accordingly punctured with a lancet the tumor in the right nostril, having first rendered it as fixed and as prominent as possible; the result was satisfactory, being attended with almost immediate relief. A quantity of blood, half fluid and half coagulated, escaped, and by pressure both tumors were evacuated through the same opening and subsided gradually; a good deal of diffused hardness and tumefaction yet remained; but ultimately a complete cure was effected.

Case XV.—Abscess of the Nasal Septum due to Syphilis. By Samuel Johnson, M.D. (*Maryland Med. Journal*, Vol. vi., No. 3.

Miss B., aged 25, was in good health, she states, until February, 1878, when one morning she noticed that her nose was inflamed, and she had a chill, followed by high fever. The family physician was consulted, and her affection diagnosticated erysipelas; the usual remedies in the treatment of this disease being prescribed. With time, the whole phase of the affection was changed, and I was asked to see the case five days after the beginning of her illness.

The physiognomy of the patient was peculiar. Her nose, face, and eyelids were greatly swollen, deeply reddened and pitted upon pressure.

Protruding about the one-eighth of an inch from each nostril was a polypoid mass—fluctuating upon palpation, attended by a muco-purulent discharge. The patient complained of a throbbing pain in the parts and dull frontal headache, the conjunctivæ were congested, and there was a constant overflow of tears in consequence of the temporary closure of the nasal ducts; hearing was also impaired, and the voice had a nasal twang. Examination with the mirror showed the nasal mucous membrane deeply congested and much swollen.

Protruding about the one-eighth of an inch from each nasal orifice was a mass so extensive in size, as to completely occlude the nasal passages. The soft palate was inflamed, as was also the pharynx.

Rhinoscopic examination revealed tumefaction of the mucous surfaces in the post nasal space, and (the case being an unusually favorable one for rhinoscopy) the abscess was seen arising from the nasal septum, at the junction of the osseous and cartilaginous portions, projecting forward. The abscess was opened, a free discharge of pus and blood giving, at once, great relief to the intense pain which the patient was suffering. Warm anodyne applications were made externally, and a solution of borax and carbolic acid, in tepid water, was injected through the nostrils every few hours. Quinine and iron were ordered, with beef tea and milk.

The patient made a satisfactory recovery from the acute symptoms. But necrosis of the nasal septum followed, the cause of which, it was subsequently ascertained, was due to specific disease.

Case XVI.—Congenital Stenosis of Right Nasal Fossa, with Unilateral Sweating. Prof. Whittaker, *Cincinnati Lancet and Clinic*, 1879, N. S., ii., p. 442.

J. E., æt. 29, muscular, solid build, weight 160 lbs., deep, broad chest. No constitutional taint. Complains of obstruction of right side of the nose, which he says has always existed, has never been able to breathe through it, though secretions flow when he depends his head. When the left side is blocked up by a cold, he has to breathe through his mouth. He also complains of excessive sweating of right side of his face, especially in connection with any mental emotion; sense of smell on right side is *nil.*

External nose appears symmetrical. There is a deviation of septum towards the right fossa anteriorly, left nasal fossa greatly enlarged. The Eustachian catheter passes readily two-thirds the length of the inferior turbinated meatus, and then blocks up against a solid wall. The finest probe cannot be passed by the obstruction. Posterior rhinoscopy shows the posterior nares to be normal, though the chambers of the right side are narrowed to crevices. It was decided to perforate the obstruction along the line of inferior meatus. This was done by a bone drill, which was, after two or three rotations, sent into an open space, and air was immediately admitted; hæmorrhage trifling. There was an escape of a large amount of gelatinous mucus, to the intense relief of the patient. The passage was dilated for six days with dilators, of increasing sizes, until the passages remained open for the entire day, permitting the easy ingress and egress of air. The hemifacial sweating, though lessened, was not entirely relieved.

Case XVII.—Bony Occlusion of both Posterior Nares.—Perforation of the Septum with the Revolving Curved Trocar.—Successful. J. B. Wilkerson, M.D., *North Carolina Medical Journal,* Vol. ix., page 5.

W. C., æt. 6 years, seen first in September, 1881. There had been no respiration through the nostrils since birth; never been able to nurse at the breast; general mental and physical condition good, though it was easily seen that chronic nasal trouble existed. There was occasional trickling down of the tears over the face, and the anterior outlets of the nose were very small. There was no deafness noted, but the special senses of taste and smell were very deficient. A small probe was passed along the inferior nasal floor, it meeting with no obstruction until it reached a point about two and a half inches from the frontal opening; here both cavities appeared to be firmly closed by a solid material. Flexible probes were tried with no better result, a silver female catheter was passed down, and percussion with this, gave a clear metallic sound. The obstruction could not be seen by means of illumination. After some trouble, a rectangular probe was passed into both posterior nares about half an inch. This clearly demonstrated that the anterior and posterior nares were patulous up to the stated point of occlusion. On December 8, 1881, the following operation was performed with a revolving trocar and curved canula expressly devised for the case. Fearing that a fatal asphyxia might ensue from chloroform, should the mouth become closed during anæsthesia, the patient was firmly secured. Passing a female catheter down to the obstruction in the nasal fossa, a mark was made on the catheter at the anterior nasal outlet; withdrawing the instrument, a similar point of measurement was marked on the canula of the revolving trocar.

After retracting the end of the drill within the tube, the latter, dipped in carbolized oil, was passed down to the obstruction; slowly pushing forward the trocar point, and holding the rim of the canula in the left and the handle of the instrument in the right, the drill was given a rapid circulatory, rotary movement, quickly and smoothly boring through the bony septum. The other nostril was treated in the same manner. Pretty free hæmorrhage followed the perforation, the patient was enabled to discharge the blood through the mouth, the bony plate appeared to be about one-fourth inch in thickness. After arresting the bleeding, a gum bougie was passed through both nostrils into the pharynx; as soon as the drill was withdrawn the patient forced air and blood from both nostrils, sending it some distance. A drainage tube about six inches long, penetrated by numerous holes about both ends, with one large hole in the center, was passed, one end being passed through one nostril, and the other end passed through the other nostril until both ends protruded into the posterior nares; the tubing was then fastened by means of adhesive plaster, and the nose washed out through the center opening in the tubing. On the sixth day the tubing was removed and a gum bougie passed through the nasal cavities every day. The result was highly satisfactory, the channel kept pervious, and nasal respiration established, added greatly to the patient's recovery.

Case XVIII.—A Case of Congenital Closure of the Posterior Nares. T. R. Ronaldson, M.D., *Edinburgh Medical Journal*, 1880, xxvi., 1035.

A case of a child delivered at full term. When the child was born, peculiar obstruction to its breathing was noticed. On attempting to inspire, the lungs were not inflated, while the under lip and cheeks were sucked in. On slapping the buttocks to make the child cry there was no difficulty to free respiration when the mouth was opened. On keeping the mouth open by a spoon, and pulling the tongue a little forward, it breathed well and steadily, and cried lustily. There was, therefore, no obstruction to the respiration *through the* mouth and larynx. On examination of *the nostrils,* they were found to be filled with a sub-*stance,* translucent in appearance, and glue-like in consistence, and which, on being taken hold of, could be pulled out *en masse*, like a piece of tough glue. It was evidently a collection of inspissated mucus. After removal of this mucus an attempt was made to blow air through the nostrils, but it failed. Passing the forefinger of one hand to the back of the pharynx, with the pulp directed upward, careful attempts were made to pass a probe, bent at the end, along the floor of either nostril and through the posterior nares so as to touch the finger in the pharynx, but these attempts failed, and the conclusion was arrived at that there was some organic obstruction of the posterior nares. The child died shortly after its birth. Autopsy revealed that the posterior nares were completely occluded by a firm membrane.

The firmness of the occluding membrane was such that an ordinary surgical probe could hardly be forced through it without bending on itself. The nose, anterior nares, cavities of the nostrils, the hard and soft palate, were normal. The child was plump and generally well developed.

Case XIX.—A Case of Bony Closure of the Nostril; Removal by the Burr Drill. O. D. Pomeroy, M.D. *New York Medical Record*, 1881, xix, 652.

Mr. H., aged 35, has had total obstruction of his right nostril as long as he can remember; there is catarrhal condition of that nostril with considerable secretion; he has chronic otitis-media of same side. Near the back part of the nostril the instrument is arrested by a solid wall, stretched across the passage at right angles to its bony axis. It could not be broken *through by the* utmost pressure. Mucous lining of *the nostril* was too swollen to get a view by illumination. The finger was passed behind the velum, and by crowding very hard the tip could just be made to reach the obstruction, which appeared the same behind as in front. Its thickness did not seem to be great, as estimated by the distance the probe passed into the nostril before reaching it. There seemed to be no doubt that there was a bony growth, extending from the inferior turbinated bone across the nostril, completely closing it. It was determined to remove the growth, or make a sufficient aperture to allow the air to pass freely through it. The dentist's lathe occurred as a very appropriate instrument to use, but the drills coming with any in the market were too short. A drill was accordingly made to order, having a chisel-like point, with the sides for a short space made quadrilateral. The length of this drill was four inches; its chisel-like extremity was one line in diameter. A hole through the bony wall was easily made by this instrument, but it could not be enlarged sensibly. A cross-cut Burr drill was then constructed, the cutting being rather coarse to diminish the liability to clog; the cross-cutting being also for the same purpose. The Burr portion of this drill was almond-shaped, and about two lines in diameter at its widest part, length about one and three-fourths its width. This instrument readily made its way through the bone, boring as well laterally as in front, and in three sittings an aperture was made sufficiently wide to allow of moderate breathing through the nostril, and the ability to clear it comfortably and thoroughly by blowing the nose. There was some difficulty in passing the drill up the narrow nostril, as it was inclined to catch in its swollen and soft lining. This difficulty was obviated by filling the interstices of the drill with vaseline, *when it was* passed with comparative ease. No ether was given, and the operation was not excessively painful, only a moderate amount of hæmorrhage occurred. The nostril was closed for a few days after the operation by the swelling of the soft parts.

Case XX.—A hitherto undescribed lesion, causing Epistaxis. With four cases. By J. L. Little, M.D., *New York Hospital Gazette*, 1879, vi., 5.

(*a.*) Was called to attend a gentleman, aged 40, who was suffering from severe epistaxis ; patient had lost a great deal of blood from a previous hæmorrhage which was arrested by anterior plug, but soon returned on removal of plug. Patient was ready to have posterior nares plugged, but finding only a little blood had run down the posterior nares, the anterior nares was inspected, and the point of hæmorrhage was found in the septum, about half an inch above the columna ; the cartilage at this place seemed to be slightly eroded. Hæmorrhage was permanently arrested by touching the bleeding point with the muriated tincture of iron.

(*b.*) November 6th, 1872, Mr. L., aged 30, called at my office complaining that he had had two severe attacks of epistaxis during the past 24 hours. The next day he called again, stating that during the night his nose had again bled profusely. He was pale and his face showed that he had lost considerable blood. The hæmorrhage had been controlled by ice and cold water. Tinct. ferri. chlor., was ordered. The next day he called again with his nose bleeding profusely. An examination revealed a small ulcer in the septum about half an inch from the edge of the nostril and very near the anterior margin of the cartilage. The blood could be seen flowing freely from a small point, and was arterial in color. Upon touching the point with a stick of nitrate of silver, the bleeding at once ceased. A second application was made the following day, and no hæmorrhage recurred. The erosion healed in a few days under the scab.

(*c.*) Miss I., aged 35, seen first on March 12, 1874. Patient found just recovering from syncope following epistaxis. The anterior naris was plugged and patient directed to call the following morning when she gave following history: She had had a small pimple on the left side of the nasal septum for about a week. While picking this spot on March 9, she started a free hæmorrhage. On March 10th and 11th she had two attacks of profuse hæmorrhage. On the 12th she lost so much blood that she became faint. Examination of the interior of the nose revealed a small spot on the septum covered with dried blood. On wiping this away a distinct spurt of arterial blood took place. The stream was about the size of a small needle. No blood ran down the posterior nares. Pressure on outside of nose with finger and thumb and pressure under upper lip arrested hæmorrhage. Nitrate of silver was applied with effect, no hæmorrhage recurred and the ulcer healed in about a week.

(*d.*) Mrs. L., aged 50, had never before suffered from epistaxis. On December 13, 1878, while picking her left nostril, it feeling sore, she started a hæmorrhage; bleeding was very free and ran down her nostril in a stream; did not run down her posterior nares only when she was lying down. The hæmorrhage continued with slight remissions from 10 A.M. till 4 P.M., when it was arrested by plugging the anterior nares. Then following on removal of the plug there was a recurrence of the hæmorrhage. On examination I could see an arterial jet from a small erosion on the septum. This was permanently arrested by application of nitrate of silver.

Case XXI.—Nasal Diphtheria. Thomas Amory De Blois, M.D., N. Y. *Medical Journal.*

(*a.*) Edward H., aged 5 years. The mother stated that she thought the child to be perfectly well, excepting a persistent cold in the head which had lasted for two weeks, the patient in the meantime playing about, seemingly as well as ever. The child appeared to be healthy, well grown, good spirits, no exacerbation of temperature and pulse. On examination of the nose at both orifices appeared a dense, white membrane, which reached as far as the skin of the nose, from which it was separated by a red line. The membrane was somewhat raised above the surrounding surface, and was covered by a thin, white, watery mucus, rusty at some points, which trickled down on the lip, where it appeared to be the cause of numerous excoriations. The fetor was much greater than the amount of diseased surface would seem to account for. The membrane appeared to extend posteriorly as far as could be seen, and to completely invest both nostrils. The vault of the pharynx and turbinated bones posteriorly were almost covered with the membrane. Upon trying to detach a portion of the membrane in the anterior nares, a raw, bleeding surface was left, and it was impossible with the cotton stick to sweep away any portion of it. There was no membrane in either the pharynx or larynx. The nostrils were sprayed out with a carbolized solution, after which iodoform was insufflated and a stimulating and tonic medication ordered. The following day the membrane had extended to the pharynx, and the following morning breathing was impeded, tracheotomy was refused, and the patient died about forty-eight hours after the first examination.

(*b.*) Charles M., aged 4 years, a well nourished child, who had always been extremely healthy, first symptom noticed was a very offensive puro-sanguinolent discharge from the anterior nares. Examination revealed a membrane in both nostrils, the edges of which were clearly defined, extended well to the front and were terminated by a bright red line of demarkation. No fever; pulse soft and compressible; loss of appetite and flesh. Patient played about during day, but at night would be awakened by attacks of dyspnœa. In about three and a half weeks the membrane lining the right nostril became partially detached, though it was firmly adherent anteriorly, and could be heard flopping in the air passing. Shortly after this it came away; the blood and pus stopped flowing, and that nostril became perfectly clear. In a week more the second nostril cleared itself in the same way, and the disease terminated in about five weeks without any sequelæ. Treatment consisted of washing out the nares frequently with a two-and-a-half per cent. solution of the sulpho-carbolate of zinc, the insufflation of iodoform, and the internal administration of brandy, milk, and beef-juice at intervals.

Case XXII.—A Case of Supposed Nasal Calculus. R. D. Clark, M.D., *Albany Medical Annals*, 1883, iv., 34.

Patient, a boy aged six years. About four years ago snuffed a pea into his left nasal fossa, which was removed by a surgeon; the mother of the patient saying that it was entirely removed. Two and a half years after this, the parents noticed a bloody discharge from the left anterior naris, treatment for this condition, supposed to be catarrh, was followed, but with no success. On October 13, 1882, the patient fell with a bean-blower in his mouth, causing considerable laceration at the roof of the mouth. In treating this injury, attention was called to the condition of the nose, when an examination was made and the left nasal cavity was found nearly closed by a polypus. This was torn away with the forceps, and, after the hæmorrhage ceased, a probe was introduced, which came on to a hard substance which was supposed to be dead bone, but which proved to be a calculus. A great deal of difficulty was experienced in trying to remove it, but finally it was rolled out of its bed with the scoop-shaped end of a grooved director. The soft parts rapidly healed after the removal of the rhinolith, and at the present time the patient appears perfectly well. The specimen is wedge-shaped, with sharp, irregular angles ; its base is ¼ inch square, and from base to apex it is ½ inch. It is of a brownish color, and, superficially, has a calcareous appearance. A subsequent examination proved the specimen to be composed mostly of cork, covered over with a calcareous concretion.

Case XXIII.—Foreign Body in Posterior Nares. By D. Bryson Delavan, M.D., New York. *Archiv. Laryngol.*, 1880, Vol. i, No. 1.

Mary S., æt. 11, had suffered nine years from a severe ozæna, for which, although repeated attempts had been made, she was unable to obtain relief. Examination showed the left nasal cavity to be normal. The right cavity was completely occluded, its posterior third being filled with what appeared to be a mass of crusts and suppurating tissue. A probe passed through this mass from before, backward, met with firm resistance at a depth of one and one-half inches from the entrance to the nostril. The opposing body felt hard and rough, and in shape seemed spheroidal, with a well-marked projection at one side, which on further exploration appeared to form a loop. The nostril being too narrow to admit a slender forceps, the tip of the probe was bent in the shape of a hook, which by a little careful manipulation was slipped into the above-mentioned loop and firm traction made with the result of bringing to light a shoe-button thickly incrusted with calcareous deposit. Into the eye of this button the curved end of the probe had fortunately found its way. Thorough examination revealed extensive thickening and deep ulceration of the pituitary membrane over the posterior third of the inferior turbinated bone and the corresponding portion of the septum, together with slight displacement of the latter. There was no evidence, however, that the bones were in any way diseased. Patient was ordered a weak solution of potass. permanganate in water, to be used with a nasal douche three times a day. A week after the operation the offensive discharge had entirely ceased, the ulceration was completely healed, and excepting a moderate degree of displacement of the septum toward the left, not a trace of the trouble remained.

Case XXIV.—Maggots in the Nares. R. E. Prince, M.D., *Medical News*, Philadelphia, Vol. xli., 445.

Mr. K., farmer, has had nasal catarrh with ozæna, for a number of years. While lying in the grass from early morning till nearly noon, being in a state of intoxication, a "blue bottle" fly lodged in his nose and discharged the contents of her oviduct. In due time sixty-five maggots made their appearance. They resisted all attempts at removal. Eight days following dangerous symptoms began in shape of erysipelas, and the nose was entirely occluded, relative to the passage of air, with the maggots and consequent œdema, and the condition, seen with the illumination of the nose, was nauseating in the extreme. It was found necessary to remove each one separately with a pair of forceps. Considerable bone was found denuded, but no trace of the odor of ozæna was left.

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